STATE LIBRARY OF PENNSYLVANIA
docs,pa PY H673.2 P415tr
Pennsylvania transportation /
0 0001 00043350 6

Digitized by the Internet Archive
in 2017 with funding from
This project is made possible by a grant from the Institute of Museum and Library Services as administered by the Pennsylvania Department of Education through the Office of Commonwealth Libraries

https://archive.org/details/pennsylvaniatran00swet

Py H 693.2
P 4/15 Zic
1964

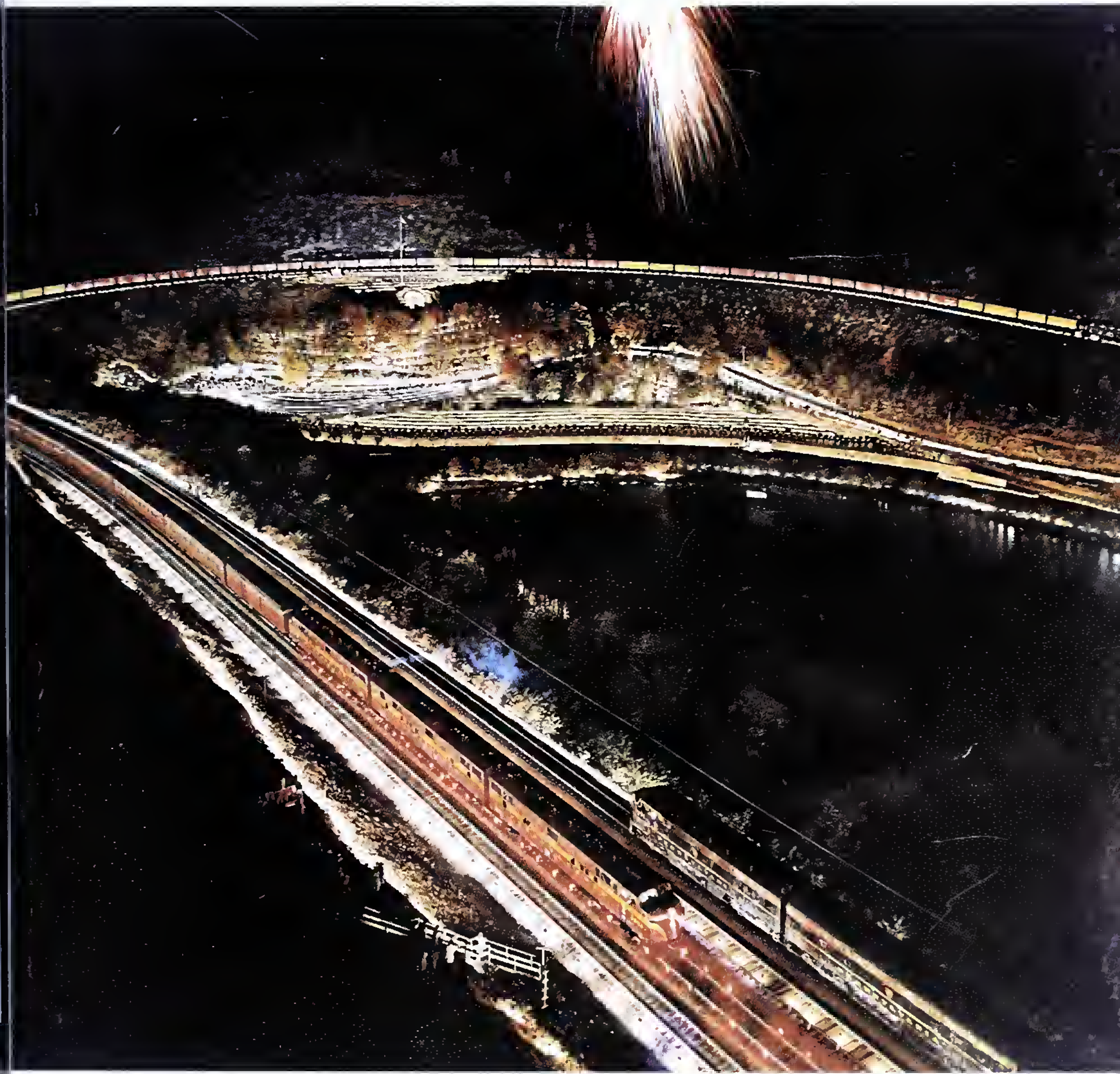
PENNSYLVANIA STATE LIBRARY
General Library Bureau
Government Publications

H615.2
415tr
2

PENNSYLVANIA TRANSPORTATION

By

GEORGE SWETNAM



PENNSYLVANIA STATE LIBRARY

PENNSYLVANIA TRANSPORTATION

By

GEORGE SWETNAM

03-50-355-4

PENNSYLVANIA HISTORY STUDIES: NO. 7

THE PENNSYLVANIA HISTORICAL ASSOCIATION
GETTYSBURG
1964

The unusual night view of the Horseshoe Curve, on the front cover, is used through the courtesy of the Sylvania Electric Company. It was photographed with more than ten thousand flash bulbs. On the back cover is a view of the Tuscarora Mountain Tunnel of the Pennsylvania Turnpike, courtesy of the Pennsylvania Turnpike Commission. The other illustrations, unless specifically credited, are from the Philadelphia Commercial Museum Collection of the Pennsylvania Historical and Museum Commission.

Printed by
Times and News Publishing Co.
GETTYSBURG, PA.

Copyright 1964

PENNSYLVANIA HISTORICAL ASSOCIATION

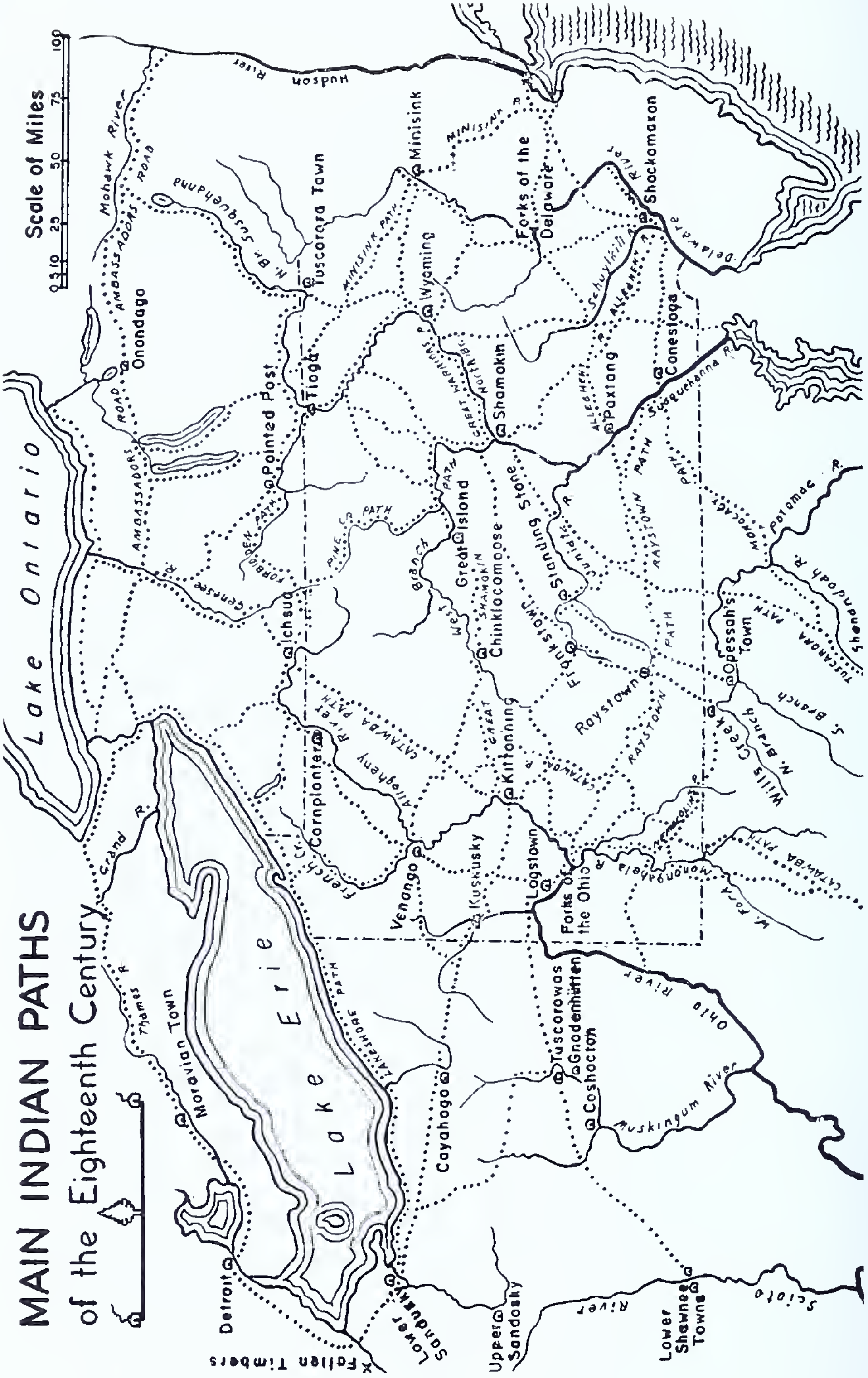
FOREWORD

The movement of people and freight across the Alleghenies, the rise of villages, towns, and cities, and the development of twentieth-century life in Pennsylvania is a thrilling story, and one that is entwined with the history of transportation. In this pamphlet Dr. George Swetnam, well-known feature writer for the *Pittsburgh Press,* describes the hopes, plans, successes, and failures surrounding three centuries of westward migration, long-distance commerce, and local traffic. Indian paths, packhorse trails, turnpikes with their Conestoga wagons and stagecoaches, river travel, canals, railroads and the "trolley era," modern highways, and airlines are all treated in these pages.

The cover illustration shows the famous Horseshoe Curve in the central part of the state. This engineering wonder, placed in service in 1854, enabled the Pennsylvania Railroad to ascend the steep eastern slope of the main stem of the Allegheny Mountains and proved that railroad transportation is practicable in difficult mountainous terrain.

When reflecting on the serious transportation problems which face the United States today, one can come to grips with them more wisely by having at hand a concise three-century record of transportation in one of its principal states. Dr. Swetnam's account of the origin and development of numerous transportation concepts provides both a fascinating and a useful record.

Standing Committee on Publications
Pennsylvania Historical Association
Russell W. Gilbert
Lawrence Henry Gipson
Alfred P. James
Donald H. Kent
Nicholas B. Wainwright
Homer T. Rosenberger, *Chairman*



Main Indian Paths of the Eighteenth Century.
—*From Paul A. W. Wallace, "Indians in Pennsylvania."*

PENNSYLVANIA TRANSPORTATION

I. TRAILS TO TURNPIKES

THROUGHOUT its history the people of Pennsylvania have been going from place to place, carrying loads of goods or merely traveling for pleasure or business. Even during the period before white settlement the Indians kept up a constant movement, and often carried obsidian or copper toward coastal areas, bringing back shells, wampum, and other materials received in exchange.

After European ships began to bring manufactured articles, the exchange of goods became even more lively. The Indians brought furs and other things of value from considerable distances to trade with the whites or with other tribes which lived nearer the settlements and served as middlemen.

Nothing could be farther from the truth than the common idea that Pennsylvania was a "trackless wilderness," even before the time of Columbus. Despite the fact that the area was thinly settled by modern standards, it was covered by a network of trails or paths—perhaps as many as today's roads and highways, or in some places even more.

During most of its history, as Paul A. W. Wallace points out in his *Indians in Pennsylvania*, Pennsylvania's best transportation has always been by land. If its rivers were too swift, rocky, and treacherous for easy canoe travel, nature paid the debt by making the land well adapted for trails.

When the white man first arrived in Pennsylvania, he found Penn's Woods crisscrossed by a maze of roads and trails stretching in every direction. There were so many of these that they were often more confusing to the traveller than a trackless wilderness would have been.

"There were paths for all weathers," says Wallace, "wet and dry, hot and cold; and for all kinds of people, hunters, warriors, messengers (runners), diplomats, and even family parties crossing the mountains to visit friends. Most of the paths were narrow, about eighteen inches wide, just sufficient for persons moving in single file. A few paths . . . were wide enough for two men to walk abreast."

Just as some of our modern roads follow much the same course as Indian paths, so the Indians located a few paths along the traces made by deer and other animals before Pennsylvania was inhabited by man. But they followed these routes only when, and so far as, it was to their advantage, in exactly the same way as the white man later used the Indian paths where it was to his advantage, and only so far as it was to his advantage.

The early Pennsylvania Indian had no beast of burden such as the horse or ox, nor any animal he could ride. Whatever he wished to transport, he made up into a pack and carried it. His trails were the kind that were suited to a man wearing moccasins—following dry, open, and reasonably level places wherever possible. A trail for ordinary conditions might curve around a swamp, and another for use in very dry weather would cut directly through it, coming out at the same place. For extremely wet weather, there might be an even wider detour to follow a contour of higher ground.

An Indian trail was not usually kept open and free of obstruction as a modern highway has to be. If a tree fell across the path in such a way as to block it, the Indian would simply walk around it, creating a new course. Yet so adaptable were his methods that trails connecting far apart places were not much longer than modern highway mileages, and sometimes even shorter and more direct.

Of course, not all obstacles could be avoided, even by going around them. Where it was necessary in order to save a great increase in distance, Indian trails would cross mountains or swamps, cut through thickets, and cross streams, even rivers. But such obstacles were bypassed most of the time.

Seldom much of a hardship except in very cold or very wet weather, Indian travel must often have been almost as delightful as that of today, besides being far cheaper. The Indian who travelled along a principal trail was not unlikely to meet other Indians, or sometimes white traders, in which case he was never in too much of a hurry to stop and talk. His eye was usually alert for game, unless he had food with him, and he read many facts about the forest and its people from the signs left along the trail. Sometimes Indians would peel sections of trees down to the inner bark, and on this would paint figures telling of various happenings, such as wars, treaties, or perhaps the latest achievement or exploit of the one who would paint it. These "billboards" might boast of something done by the Indian or his friends, or advertise insults to enemies who might come along to see them.

When night came, the Indian slept on the ground or on a bed of leaves or branches. If the weather was bad he might stop at one of the many lean-tos and cabins to be found along any principal road, or if none were convenient, build his own.

David Zeisberger, the Moravian missionary, describes such travel in his *History of the Indians:*

> On their journeys they are never in haste, for they are everywhere at home and whithersoever they wander they find sustenance in the forest. Therefore, if a white man travels with them it is wisest that he be content not to hasten but accomodate [*sic*] himself to their movements. In the morning, they do not break camp early, not until they have eaten heartily, by which time the sun has usually been above the horizon two or three hours. Thereafter, they proceed very steadily until near sundown, when they go into camp. In rainy weather, they peel bark from the trees and speedily build a hut, that is, a roof supported by four posts, under which they remain comfortably dry. This they do, not only in summer but also in winter, at which time they know what trees to peel.

Many of the principal Indian roads were named for convenience in giving directions, although different trails sometimes had the same names, and one trail might have several different names, depending on different tribes or on the direction which one was to travel. The Great Shamokin Path, for example, along certain stretches of its route was known as the Chinklacamoose Path, along others as the Kittanning Path, says Wallace. "If one man took the Kittanning Path from Chinklacamoose, and another the Chinklacamoose Path from Kittanning, they would meet on the way. . . . The Mahoning Path west of Kuskuskies was also known as the Salt Lick Path, the Tuscarawas Path, the Sandusky Path, [and] the Detroit Path."

Wallace, in "Historic Indian Paths of Pennsylvania," lists sixteen particularly important Indian roads, five from the Delaware to the Susquehanna, five from the eastern areas to the Allegheny River, and six principal warriors' paths.

The paths from the Delaware to the Susquehanna, were:

1. The Allegheny Path, from Philadelphia, by Bryn Mawr, Paoli, Morgantown, Alleghenyville, Myerstown, Lebanon, Hummelstown, and Harrisburg or Steelton, to Carlisle, where it branched into the Raystown and Frankstown Paths.

2. The Great Minquas Path, also called the Conestoga Path, from near Philadelphia to the Forks of the Brandywine, Parkesburg, Gap, Rockhill, Creswell, and Washington Boro.

3. The Minisink Path, running from Minisink Island in the Delaware River, by Lords Valley, Blooming Grove, Hamlin, Mt. Cobb, Scranton, and the Wyoming Valley, and eastward through New Jersey to the Atlantic Coast.

4. The Perkiomen Path, from Philadelphia, by the Ridge Road to Norristown, Trappe, Pottstown, Douglassville, Amityville, Reading, and the Lebanon Valley to Paxtang.

5. The Wyoming Path, from Easton by way of the Wind Gap, to the Wilkes-Barre area.

The great paths to the Allegheny River were:

1. The Forbidden Path, from Tioga to the mouth of Canisteo Creek, up it to the town of Canisteo and thence by Shongo, Elevenmile Spring, and Shinglehouse to Portville and Olean, New York. It took its name because white men were long forbidden to use it. It was also sometimes called the Tioga Path.

2. The Frankstown Path, one of the two main paths followed by traders from the Harrisburg area to the Ohio River country. From Carlisle it ran by way of Roxbury, Shirleysburg, Huntingdon, Water Street, Frankstown, Hollidaysburg, Kittanning Point, Chest Springs, Diamondville, and Indiana, to the Allegheny River, opposite Tarentum. From Shelocta a favorite branch known as the Kittanning Path ran northwest to Kittanning.

3. The Great Shamokin Path ran from present-day Sunbury to Muncy, Montoursville, Williamsport, Lock Haven, along Bald Eagle and Marsh Creeks to Snow Shoe, Moshannon, Clearfield, Luthersburg, and Punxsutawney to the Allegheny River at Kittanning.

4. Nemacolin's Path, from present-day Cumberland, Maryland,

along the general course of U. S. Highway 40 through Uniontown to Brownsville, on the Monongahela River.

5. The Raystown Path ran from present-day Harrisburg, by Shippensburg, Fannetsburg, Burnt Cabins, Fort Littleton, Bedford, Stoystown, Ligonier, and by two branches to the forks of the Ohio at Pittsburgh.

The main warrior paths were:

1. The Catawba Path, from the area of present-day Olean, New York, and stretching far into the South. In Pennsylvania it ran by Kane, Brookville, Indiana, Ligonier, Connellsville, and Uniontown to cross the Cheat River into West Virginia.

2. The Great Warriors' Path, which ran from Tioga Point past Wyalusing, Tunkhannock, Northumberland, Sunbury, and south by any one of several good routes.

3. The Lakeshore Path, from Buffalo, New York, by North East and Erie to Conneaut, Ohio, and into the West.

4. The Pine Creek Path, from the Genesee Country by West Pike, Galeton, Ansonia, and through the "Grand Canyon of Pennsylvania," to Blackwell, Cedar Run, Jersey Mills, and Jersey Shore.

5. The Sinnemahoning Path, up the West Branch of the Susquehanna and Sinnemahoning Creek to Emporium and over the Portage Path by way of Keating Summit to Port Allegany.

6. The Venango Path, from Presque Isle on Lake Erie to the head of French Creek and south by Waterford, Meadville, Carlton, Franklin, Harrisville, Prospect, and West View, to Pittsburgh.

With the arrival of the white man came a new phase in land transportation in Pennsylvania. There are two particular reasons for this: (1) the whites brought horses and cattle, and before the settlements were very old they were building roads—at least enough to accommodate carriages in the town, and wagons drawn by horses or oxen for use in the nearby countryside; (2) then the white man developed trade, buying furs from the Indians, and in exchange selling them knives, hatchets, blankets, ornaments—and eventually guns and whiskey.

At first these exchanges were made in or near the eastern settlements, the Indians bringing in packs of furs on their backs. But the hunger for furs quickly grew to such a point that before 1730 traders were carrying their wares on packhorses across the mountains into the upper Ohio Valley, and sometimes as far as Illinois.

The wilderness trails, especially the Raystown and Frankstown Paths, quickly became packhorse roads. Two or three men could take a string of a dozen or more horses safely across the mountains. The animals, each with about 200 pounds or more of trade goods, were roped together so as to walk one behind the other. One man walked at the head to lead the front horse, another brought up the rear, and perhaps a third and fourth might accompany a long string of horses to see that everything went smoothly. Along the way, they camped out or stopped at the homes of settlers or at friendly Indian towns. Arriving at their chosen spot, usually on some watercourse and near an Indian town, they would set up a trading house. Indians from all over the district would flock to this place, and by the time the traders had purchased a load of furs, two or more of the men would make a return trip with the pack train, and others might stay in the Indian Country for months at a time, trading and making friends with the natives.

Thus, long before any permanent settlers began to penetrate western and northern Pennsylvania, traders were there, and strings of packhorses maintained a constant commerce back and forth across the mountains.

Just as the Indian trails around the eastern towns had been too narrow for wagons and carriages, the roads in the mountains were often too narrow and steep even to be safe for packhorses. As a result, they were often widened, or their courses changed, beginning a process that was to replace the labyrinth of Indian paths with one of white man's roads.

Almost as soon as settlements sprang up outside the town of Philadelphia, roads began to be built to nearby areas; first by the time-worn method of simply walking along them, riding over them on horseback and driving over them in carriages; and later as mud holes developed in the wet seasons and as usage increased, residents of the area began to build legally established roads.

As early as 1686, there was a road from Philadelphia to Morrisville, and after an act of 1700 authorized what were known as "King's highways," with trees and brush cut to a width of fifty feet, there began to be more. A road was opened to Chester in 1706, and one to Easton in 1722.

As long as these were only between nearby points, with short distances to travel, they were usually built and maintained by the people who lived along them. But with the settlement of Lancaster, the first truly inland town of Pennsylvania, about 1730, a different situation developed. The town's two hundred or so residents obviously could not afford either the time or the money to build a highway stretching sixty-five miles to Philadelphia, the nearest place of consequence where they could sell the produce of their farms and shops and buy the necessaries which they were unable to make for themselves, and which often had been imported from England or the older colonies.

The real beginning of Pennsylvania's system of highways was on January 29, 1731, when the people around Lancaster petitioned the Provincial Council: ". . . not having the Conveniency of any navigable water, for bringing the Produce of the Laborers to Philadelphia, they are obliged at a great Expense, to transport them by Land Carriage, which Burthen becomes heavier through the want of suitable Roads for Carriages to pass."

Highway development moved as slowly then as today. But in 1733 Council provided funds for such a road, which was not completed until 1741.

This was called the Great Conestoga Road, which grew into the Pennsylvania Road, running from Philadelphia to Pittsburgh along, and at many points following, the general course of today's Lincoln Highway, better known as U. S. 30. But for many years it continued to be only a dirt road, almost impassable when cut by the wheels of wagons in wet weather. In January, 1761, Chief Justice Edward Shippen wrote from Lancaster to a Philadelphia friend: "The roads have been so bad that no wagon has offered by which I could send the things I mentioned."

Despite the difficulties of the road, Lancaster became a large town for that day, and freight hauling reached such a point that when General John Forbes needed horses and wagons for his expedition which took Fort Duquesne from the French and resulted in the founding of Pittsburgh as a British town in 1758, Benjamin Franklin went immediately to the Lancaster district to secure them.

By 1736 a road of sorts had been opened to Harris' Ferry (Harrisburg) and one begun from there south through the Cumberland Valley to the Potomac, which soon became an important way from Maryland to the Pennsylvania frontier. A King's highway was also cut westward at about the same time connecting present-day Easton, Allentown, and Reading.

The first stagecoach service from Philadelphia to New York was begun in 1756, ordinarily on a three-day schedule in summer and four days in winter. But often in spring and fall, and during long periods of wet weather, the road became almost impassable. By 1763 a once-a-week stage line was operating between Philadelphia and Bethlehem.

When Maj. Gen. Edward Braddock led an expedition against the French at Fort Duquesne in 1755, he hewed out a road from the present site of Cumberland, Maryland, almost to Pittsburgh. Entering Pennsylvania in what is now Somerset County, he followed the general course of what is today U. S. Highway 40 to within less than ten miles of Uniontown, then turned northwest past Stewart's Crossing (Connellsville) and crossed the Monongahela River twice near the present town of Braddock, which gets its name from the General's disastrous defeat there.

The Virginia authorities, who were helping supply the later expedition, urged General Forbes to follow the same course. But he chose to build a new road westward from Carlisle, largely along the course of an Indian and packhorse trail called the Raystown Path because it passed through Bedford, then known as Raystown. But often it diverged from this course for miles, running southwest to Fort Loudon, north to Burnt Cabins, and then west along much the course of the Pennsylvania Turnpike.

Almost as soon as the Forbes expedition had ended, military convoys had begun improving the road, here and there varying its course for miles, sometimes to save distance but oftener to avoid steep grades and swampy places along the way. Much the same was done along the Braddock Road. Under a 1785 Act of Assembly it was shortened, the short-cut from Shippensburg to Burnt Cabins being finished in 1788.

Despite this boost, and the volume of traffic which passed over the Pennsylvania Road to and from Pittsburgh, it was far from being a dream highway. Because of the danger of Indian ambush attack, much of its course was along the tops of ridges. Its grades were a strain on horses pulling loads uphill and holding them back as they went down again, and ruts and mudholes developed so frequently that new detour roads were constantly being developed by those who took their axes and cleared away brush in order to get firmer ground to travel on.

By the time the American Revolution began, much of southeastern Pennsylvania had what were then considered good roads—at least in summer and when not too heavily travelled. In the Cumberland Valley and west of the mountains the roads were constantly being improved, but across the Alleghenies there remained only the two principal highways, the Forbes Road from eastern Pennsylvania and the Braddock, or as the latter was often called, Washington's Road, from Maryland and Virginia.

Some have mistaken certain early references to mean that even these were allowed to grow up during this period. But the evidence is all the other way: Residents who were continually petitioning the courts for permission to open roads in their own areas would hardly be expected to permit the two roads which were their only lifeline to outside civilization to become impassable. Although packhorses were still more commonly used than any other means of transport across the mountains, the need for wagon roads west of the Alleghenies is a strong proof that wagons were at least coming across the two roads from the East, and almost certainly return trips were being made in good weather.

As Robert Louis Stevenson has said: "When a road is once built, it is a strange thing how it collects traffic, how every year as it goes on, more and more people are found to walk thereon, and others are raised up to repair and perpetuate it, and keep it alive."

Although it must have received little attention during the years of the Revolution, the Forbes Road was still in good enough condition that in 1783 Johann David Schoepf, who had come to America as a physician to mercenary troops but stayed following the end of the war to see the country, was able to make the journey from Bedford to Pittsburgh and return in a two-wheeled chaise. It was the first such vehicle that had crossed the mountains, and was looked on as a curiosity. Schoepf's account shows that there was a considerable amount of travel at that period, although for much of the year roads must have been open only for packhorses, and unquestionably they made up a major portion of the freight-carrying traffic for a number of years. At this time there was enough traffic on the road that many of those who lived along it were beginning to set themselves up as tavern-keepers, but not yet nearly enough that the travellers could find spacious hotels and sumptuous meals such as later abounded on many of the highways of Pennsylvania, particularly the Pennsylvania Road and the National Pike.

Schoepf was not much impressed with the type of accommodations he found:

> In the afternoon at four o'clock we arrived at a large tavern where, if one brings meat and drink along with him he finds room enough to dispose of them. Two young fellows kept house but had nothing except whiskey and cheese; bread and meat are accidental articles. We were obliged to push on over the Alleghany and as far as its foot had a swampy and stony road. . . . The sun was just going down when we reached the foot of the mountain, and the tall thick woods soon hid from us completely the dull twilight and we found ourselves in darkness. A few other travellers had joined us at the last house; they were as much strangers here as we, and were as little pleased at stumbling from stones to slough, and from slough to stones. We were not prepared to stay in the woods; we could neither make a fire nor care for our horses. Everything was dead, still, and dark about us; nothing could be heard from the four-footed or feathered inhabitants of these wastes. After four miles, which in our situation seemed to us endless, we reached the cabin of a smith on the other side of the mountain who on occasion plays the innkeeper. Unfortunately his house was no inn this evening; he had nothing, and we must grope for two heavy miles more, to the farm of an Anabaptist by the name of Spiker whose milk-white countenance stood out of a raven-black beard. We arrived after 10 o'clock; he kept no tavern and we were glad of it, for we were taken in willingly and given milk, butter, and bread, and straw for a couch. . . .
>
> Over Laurel-hill it is 12 miles from the last house in the Glades to the first on the other side. A desolate and wild mountain it is, its ridge and western slopes exhausting for horse and man; not so much because of

> steepness, as on account of the abominable rock-fragments lying in the greatest confusion one over another and over which the road proceeds. On this mountain we fell in with two heavily loaded wagons, carrying the baggage, women, and children of several families travelling together. . . . In the evening we reached the first cabin on the western side of Laurel-hill. This was the residence of Doctor Peter, a German, who was absent looking for his pigs gone astray in the woods. His wife, a good little old woman, and energetic, gave our horses oats for their refreshment and set before us mountain-tea and maple sugar, which as well as her bacon, whiskey, and cakes were the products of her own land and industry.

The hunting must have been very poor at the time Schoepf made his trip, because most accounts would indicate that the principal fare offered in almost all the taverns was freshly killed game, and many of those travelling these roads complained for years that squirrel stew and venison were about the only food one could get.

Even in post-Revolution days, roads were still far from good, and on September 21, 1785, the State Assembly passed its first legislation for public roads—setting aside funds to improve the Chambersburg-Pittsburgh Pike, a distance of 197 miles. Work was begun soon afterwards, and by 1787 the road had practically the course it continued to follow until the beginning of modern paved highway construction, after World War I.

Work consisted largely of cutting brush and trees which tended to grow up and of straightening the roadway, as well as removing stones too big for a wagon to pass over. The road tended to be broad and level in the meadowlands, narrower through the great forests where it was necessary to clear many large trees, and in the passes of the mountains quite narrow and dangerous, full of steep grades, and often running alongside sharp declivities which threatened danger if the team should go too near the edge.

Until after 1790 much traffic from Philadelphia to Pittsburgh went west by Lancaster and York to Chambersburg, but a good deal turned north by Morgantown and Lebanon to Harrisburg, and thence by Carlisle to Chambersburg. That from Baltimore reached Chambersburg by going west to Hagerstown, then north through Greencastle, along the course of today's U. S. 11. Some years later a road following much the course of U. S. 22 was built westward through Lewistown, Huntingdon and Hollidaysburg, and called the Frankstown Road.

Rough as it was, the Pennsylvania road was a real improvement over the former condition, and until after 1800 carried almost the entire traffic for Pittsburgh, as well as the thousands upon thousands of immigrants going to settle in southwestern Pennsylvania or continue down the Ohio to Kentucky. Archer B. Hulbert, who made an intensive study of the history of America's highways 60 years ago, stated that apparently nine-tenths of the traffic from Philadelphia, Washington, or Baltimore to the Ohio Valley travelled by this road.

Very soon a branch was constructed which carried traffic from four miles west of Bedford to the Youghiogheny River at West Newton, where those wishing to go down the rivers could travel at high water by flatboat to the Monongahela and reach Pittsburgh or other points on the Ohio.

As roads were improved and the amount of traffic increased, the wayside taverns offered better food and shelter. Hulbert says that along the Pennsylvania Road, inns in areas settled largely from the British Isles served fried ham, corned beef and cabbage, mutton and beef stews, steak, cold meats, mush, molasses bread, and tea. In German-speaking areas the traveller could count on such foods as mock-turtle soup, sauerbraten, beef à la mode, roast pig, veal, mutton, tripe, chicken potpie, sausage, apple dumplings, cake, and coffee cake.

Morris Birkbeck, an eccentric Englishman who founded a settlement in Illinois, wrote in his journal on May 23, 1817:

> Old America seems to be breaking up and moving westward. . . . About 12,000 wagons passed between Baltimore and Philadelphia [and Pittsburgh] last year, carrying from 35 to 40 cwt. The cost of carriage is about seven dollars per cwt. from Philad[elphi]a to Pittsburg. . . . Add to these the numerous stages loaded to the utmost, and the innumerable travelers, on horseback, on foot, and in light waggons, and you have a scene of bustle and business, extending over a space of three hundred miles, which is truly wonderful. . . .

Although Pittsburgh had a regular mail service twice a week to and from Philadelphia in the early 1790's (the trip required about two weeks at best), a great deal of the traffic continued to be by packhorse for many years—especially so in winter, since wagons had no brakes before 1800 and often were forced to chain a wheel so that it would drag, or tie a sizable tree or log behind the wagon to hold it back from running over the team as it went downhill.

But road building sometimes proved more difficult in the rich land of eastern Pennsylvania than in the wild country of its west. By 1792 the road from Philadelphia to Lancaster became so bad in wet weather that on April 7 of that year the legislature granted a charter for a toll road, the Philadelphia-Lancaster Turnpike. Built with a minimum fifty-foot right of way, its main roadbed surface had a compact base twenty feet wide made of heavy stone topped with gravel or fine stone and dirt. Completed in 1794, the road cost $464,142.41 or about $7,141 per mile. The stone breaking was almost entirely done by hand on the road, the stone having been hauled from nearby quarries and dumped along the course of the highway. Today's staggering costs, reaching more than a million dollars a mile, would be even more expensive if work still had to be done by hand.

Toll gates were set up at intervals of from two to five miles. The cost for a horse and rider was 6¼c at each gate, and the same for a yoke of oxen; a two-wheeled cart was 12½c and a cart or wagon with four wheels 25c unless drawn by four horses, when the cost was 37½c.

The toll plan was quite successful, and the state, lacking funds for a complete road program, began to license turnpikes all over its area. Soon the Pennsylvania Road was greatly improved, but was charging toll along its entire length. Other turnpikes also were constructed, so that by 1830 almost every county, except a few of the more remote and backward ones, was crossed by two or three such toll roads.

Although the Pennsylvania Road west of Chambersburg was made a toll highway in 1806, work was not completed on it until 1818. Approximately 200 miles in length, built with a stone roadbed twenty feet wide like that of the Philadelphia-Lancaster Turnpike, it cost a total of $450,000. For the twelve-year period, using a road still under construction must have been the same sort of headache as it is today, for Margaret Dwight, travelling in 1810 near Bedford, remarked: "We saw some of the worst roads today that we have ever found—and some as good as any in the State."

Perhaps the changing of the great Pennsylvania Road to a toll highway to secure money for its reconstruction was Pennsylvania's answer to the threat of a greater road which would carry most of its traffic outside of the Keystone State's border.

When Ohio, Indiana, Illinois, and Missouri were admitted as states, the acts provided that part of the money secured from the sale of wilderness land was to be used in building a highway from the eastern seaboard, to promote settlement of the new area. In accordance with this promise, Congress set aside $30,000 of this money early in 1806 to be used in building a highway partly along the course of the old Braddock Road, from near Cumberland, Maryland, to Ohio. Politics played a considerable part in locating the highway, which was to enter Pennsylvania in southwestern Somerset County, near Addison, pass through Uniontown and Washington, and reach the Ohio River at Wheeling. The location was finally agreed on in 1808, and work got under way in 1811 on the initial contract.

First a strip 66 feet wide was cleared of all trees and brush. Then a thirty-foot roadbed was leveled with pick and shovel, and there were some cuts, fills, and bridges. Finally the central twenty-foot road surface was macadamized, or filled with base stone not over seven inches across, and surfaced with stone broken small enough to pass through a three-inch ring. But it was hardly a modern highway, since grades sometimes were as steep as 555 feet to the mile.

By 1813 contractors had finished only ten miles, and three years later a total of 28. But by 1818 the road had reached the Ohio River at Wheeling. The cost had averaged around $6,500 a mile east of Brownsville, and was much higher from there to the Ohio —largely because politicians got some of the contracts.

Already traffic was passing over the road, which quickly became the mainstream of American travel to the West. Freight wagons moved back and forth along the road in long lines, and stagecoaches of several different companies raced one another for public favor—often getting upset and injuring passengers.

The glory of the highway was the Concord coach, used by stagecoach lines in Pennsylvania. Thomas B. Searight, who had seen the old coaches in their heyday, describes them as follows:

> The grandeur of the old mail coach is riveted forever in the memory of the pike boy. To see it ascending a long hill, increasing speed, when nearing the summit, then moving rapidly over the intervening level to the top of the next hill, and dashing down it, a driver like the stately Redding Bunting wielding the whip and handling the reins, revealed a scene that will never be forgotten. And there was another feature of the old stage lines that left a lasting mark on memory's tablet. It was the "postillion." A groom with two horses was stationed at the foot of many of the long hills, and added to the ordinary team of four horses to aid in making ascent. The summit gained, the extra horses were quickly detached and returned to await and aid the next coming coach, and this was the "postillion."
>
> Excitement followed in the wake of coaches all along the road. Their arrival in the towns was the leading event of each day, and they were so regular in transit that farmers along the road knew the exact hour by their coming, without the aid of watch or clock. They ran night and day alike. Relays of fresh horses were placed at intervals of twelve miles, as nearly as practicable. Ordinarily a driver had charge of one team only, which he drove and cared for. Mail drivers, however, in many instances, drove three or four teams and more, which were cared for by grooms at the stations. Teams were changed almost in the twinkling of an eye. The coach was driven rapidly to the station, where a fresh team stood ready harnessed and waiting at the roadside. The moment the team came to a halt the driver threw down the reins, and almost instantly the incoming team was detached, the fresh one attached, the reins thrown back to the driver, who did not leave his seat, and away again went the coach at full speed, the usual group of loafers, meanwhile, looking on and enjoying the exciting scene. The horses used were showy and superb, the admiration of all who beheld them.
>
> There was one mail coach that was especially imposing. On its gilded sides appeared the picture of a post boy, with flying horse and horn, and beneath it in gilt letters this awe inspiring inscription:
>
> He comes, the herald of a noisy world,
> News from all nations lumbering at his back.

> No boy who beheld that old coach will ever forget it. The coaches were all handsomely and artistically painted and ornamented, lined inside with soft silk plush. There were three seats furnished with luxurious cushions, and three persons could sit comfortably on each, so that nine passengers made a full load as far as the interior was concerned. A seat by the side of the driver was more coveted in fair weather than a seat within. During the prosperous era of the road it was not uncommon to see as many as fifteen coaches in continuous procession, and both ways, east and west, there would be thirty each day.

Most of the coaches had fancy names, often those of states, foreign countries, cities, generals, presidents, or other important people.

Coaches sometimes made amazingly good time over the National Pike. One was driven from Frederick to Wheeling, 222 miles, in 23½ hours; another made it from Uniontown to Brownsville, twelve miles, in "the incredible time" (for that day) of 44 minutes.

For a while around 1835 even better time was made by a "pony express" in which light sacks of mail were carried by post-boys in relays, riding at top speed for about six miles each. Though no records remain, the pony express, for the time it was in operation, must have averaged from 20 to 25 miles an hour.

"From the time it was thrown open to the public in 1818," says Searight, "until the coming of the railroads over the mountains in 1852, the National Road was the one great highway over which passed the bulk of trade, and the mails between the East and the West." Actually it divided the traffic almost evenly with the Pennsylvania Road during this period. In 1836 four stagecoach lines operated over that highway's full length, but in Philadelphia travellers had to book passage a week or more in advance to be sure of seats.

However, the reality of the National Road was impressive enough. Searight recalls: "Up to twenty four-horse coaches have been counted in line at one time on the road; and large, broad-wheeled wagons, covered with white canvas stretched over bows, laden with merchandise, and drawn by six Conestoga horses, were visible all day long at every point, and many times until late in the evening, besides innumerable caravans of horses, mules, cattle, hogs and sheep." It took nearly a month to move a drove of hogs from Brownsville to Baltimore.

The westward migration continued to grow, but all America was on the move as well, following a tendency that continues to this day. Travellers went back and forth, and the increase in their number brought a change in accommodations along the highways, especially on great ones like the Pennsylvania Road and the National Pike.

Traffic became so heavy that in mountain areas where travel was slow, there was an average of about an inn every mile, and even along the level stretches of the National Pike they were not much more than two or three times as far apart.

Taverns were of three kinds, with varying accommodations and prices in relation to their trade. Highest on the scale were the "coach" taverns, which were located at intervals of about 12 miles, where the stagecoaches stopped and changed for fresh teams of horses. At these each traveller might pay around $1.50 for meals and a night's lodging, including 75 cents for dinner, 25 cents for a bed, and 50 cents for breakfast. Many of the travellers slept on the floor of the great dining room, warmed by the fire kept burning in the large fireplace, but ladies and others who wished could pay more and get private rooms.

Next in the scale were the wagon stands, where drivers stayed unless they chose to sleep in their wagons on the roadside. They had large yards for the wagons and provided food for man and beast. A wagoner seldom spent more than $1.75 for a night's lodging, including space for his bed (which he carried in a roll on the wagon), supper, breakfast and feed for his team, and a few drinks. Almost every inn had its bar, with drinks costing from three to ten cents.

Searight has given a good description of their wagons:

> The bed of the regular road wagon was long and deep, bending upward at the bottom in front and rear. The lower broad side was painted blue, with a movable board inserted above, painted red. The covering was of white canvas stretched over broad wooden bows, so that the old road wagon, probably more as a matter of taste than design, disclosed the tri-colors of the American escutcheon, red, white and blue.
>
> An average load was 6,000 pounds, but loads weighing

> 10,000 pounds, 'a hundred hundred,' as all old wagoners boastfully put it, were frequently hauled over the road.

At the lower end of the scale were the drovers' stands, patronized by the men and boys who drove herds of cattle, hogs, horses, sheep, and sometimes turkeys, to the eastern markets. They had large pens for holding stock overnight, and served rough, but cheap and satisfying food.

In general, after the pioneer period had passed, taverns prided themselves on their table and offered a wide variety of foods, to which all those who paid for a meal were welcome to help themselves until fully satisfied.

Philip D. Jordan gives the following description of the old National Pike taverns:

> Country inns served plain, substantial dishes from garden and barnyard, supplemented with wild fowl and animals. Town taverns offered a more extensive menu that sometimes included oysters rushed west along the National Road by express messengers. Little or no

Stagecoach and Conestoga Wagon. Photograph said to have been made from a painting in the old State Capitol.

> drinking was done at table. Food was served family style. "Put the 'coon at the top of the table," a Pennsylvania landlord instructed his servant, "and the barndoor he biddy at the bottom; let the terrapins be in the middle, the mush, sweet potatoes, and in*dine* [*sic*] corn at each corner, the mutton near the 'coon, and let every one have two plates, so that he can help himself when he wants a clean one."
>
> Even the poorest mountain house set out coffee, hot biscuits, corn bread, cucumbers, honey, bacon and eggs and chicken. This fare was varied with boiled green ears of Indian corn, fried squirrels and venison. Chicken, eggs and bacon, moaned John Palmer in 1818, were served until he was tired of them. The plentifulness of the Western country was noted by most travelers, who spoke of breakfast tables loaded with platters of venison steaks, fried chicken and ham and of molasses and preserved cherries.
>
> Buckwheat cakes and maple syrup were always on the menu in winter. Stacked high in brownish, glowing piles, the cakes were smothered with a sweet drawn from flowing maples in the landlord's wood lot. "I must not, in this enumeration of 'the delicacies of the season,' " commented a tourist, "forget to mention with respect a sort of pancake, which we had at Brownsville, in the greatest perfection: it is made of Indian corn, and is brought in very *hot,* and in *relays.* It is, I fancy, called a 'Johnny cake,' and is generally eaten with molasses; but it is excellent with fresh butter, and is, I believe, one of the causes of the brevity of human existence here."

Wagons and coaches were required to carry lights at night, but apparently the requirement was not strictly observed, especially on moonlit nights. During the day, long strings of wagons might be seen at almost any time, carrying an average of about 6,000 pounds each. At one time there were said to be 5,000 wagons operating on the National Pike alone.

In 1822 President James Monroe refused to sign a bill to provide money for repairing the road, holding that this was not permitted by the Constitution. The National Pike fell into worse and worse condition until after the states agreed in 1831 to take over their respective portions, charging toll to defray the cost of maintaining them. The transfer was made after the Federal government completed repairs in 1834, but toll was fixed by a

Pennsylvania law passed in 1831. The rates at each tollgate at this time were:

> For every score of sheep or hogs, six cents; for every score of cattle, twelve cents; for every led or driven horse, three cents; for every horse and rider, four cents; for every sleigh or sled, for each horse or pair of oxen drawing the same, three cents; for every dearborn, sulky, chair or chaise, with one horse, six cents; for every chariot, coach, coachee, stage, wagon, phaeton, chaise, with two horses and four wheels, twelve cents; for either of the carriages last mentioned with four horses, eighteen cents; for every other carriage of pleasure, under whatever name it may go, the like sum, according to the number of wheels and horses drawing the same; for every cart or wagon whose wheels shall exceed two and one-half inches in breadth, and not exceeding four inches, four cents; for every horse or pair of oxen drawing the same, and every other cart or wagon, whose wheels shall exceed four inches, and not exceeding five inches in breadth, three cents; for every horse or pair of oxen drawing the same, and for every other cart or wagon whose wheels shall exceed six inches, and not more than eight inches, two cents; for every horse or pair of oxen drawing the same, all other carts or wagons whose wheels shall exceed eight inches in breadth, shall pass the gates free of tolls, and no tolls shall be collected from any person or persons passing or repassing from one part of his farm to another, or to or from a mill, or to and from any place of public worship, funeral, militia training, elections, or from any student or child going to or from any school or seminary of learning, or from persons and witnesses going to and returning from courts, or from any wagon or carriage laden with the property of the United States, or any cannon or military stores belonging to the United States or to any State.

In the 85 miles of the road which passed through Pennsylvania there were six tollgates.

The National Road was one of the wonders of the world of its day. But with the completion of two railroad lines across the mountains to Pittsburgh and Wheeling in the early 1850's, things suddenly changed.

No longer were the stagecoaches fast enough for passengers, or the wagons for freight. And considering the saving in time, railroad fares and freight rates were much cheaper.

Highway traffic faded and drivers lamented with a song which ended:

Now all you wagoners who have got good wives,
Go home to your farms and there spend your lives.
When your corn is all cribbed, and your small grain
    is stowed,
You'll have nothing to do but curse the railroad.

The last stagecoach mails on the two great highways were discontinued about 1870, and on other roads as railroads arrived in their areas. Most passenger stagecoaches and long-distance hauling with wagons vanished even sooner.

Twenty years later, old-timers were still lamenting, just as others lament the passing of the steam locomotive and the sternwheel river steamer today:

We hear no more the clanking hoof
    And the stagecoach rattling by,
For the Steamking ruleth the travel world,
    And the old pike's left to die.
The coach stands rusting in the yard,
    The horse has sought the plow,
We have spanned the earth with an iron rail,
    And the Steamking rules us now.

Quickly the Pennsylvania Road and the National Pike became almost deserted. Other roads shared the same fate. Soon even the most important ones had become strictly local ways, grown up with weeds and brush until they were often little better than packhorse trails.

Yet they were not dead—only destined to sleep until there was a need again for improved highways and new kinds of turnpikes. But for almost half a century they were to lie dormant and neglected, until awakened by a new kind of mechanical contrivance and a change in Pennsylvania living.

II. RIVER TRAVEL—BATEAU TO TOWBOAT

THE nature of the country usually made it necessary for the Pennsylvania Indians to travel on foot over the wilderness paths, but they did go by water when they could, as numerous canoe places or portages testify. The birch bark canoe of the northern tribes may have been used occasionally in Pennsylvania, but the difficulty of getting a supply of birch bark kept it from being an important means of travel. When such canoes did appear, they would most likely be on the Allegheny or Susquehanna rivers, brought down over portages from central New York or the Great Lakes region. More common were canoes made of the bark from elm, black oak, or hickory trees, but they were heavy, clumsy, and difficult to handle. It was virtually impossible to carry them over the portages between the main river systems.

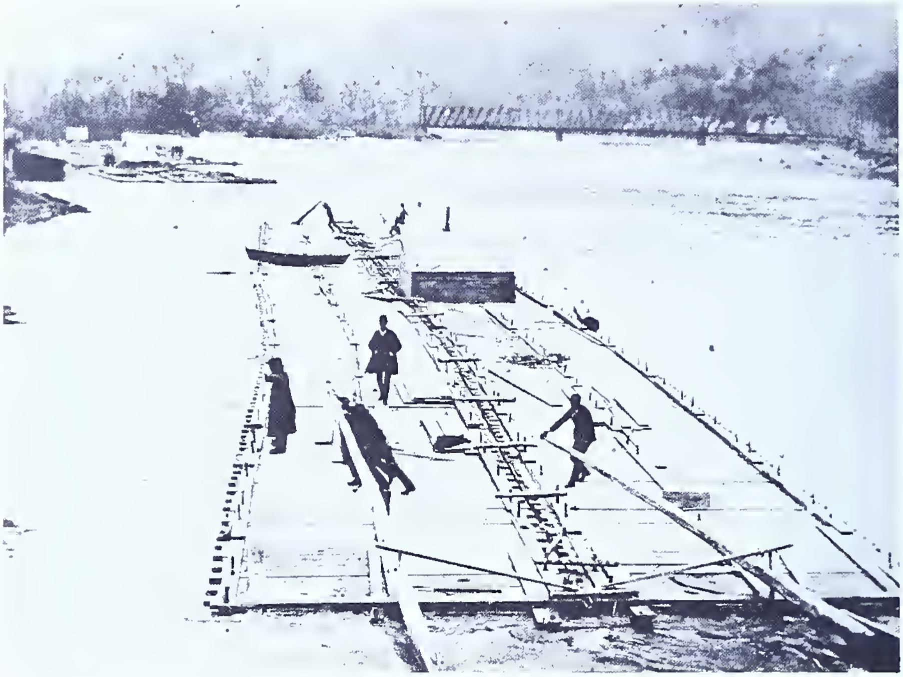
The boats the Indians used were still more likely to be pirogues or dugout canoes, formed by shaping logs outside with tools and hollowing them out inside, usually by a combination of fire and either stone or metal hatchets. These were of various sizes, sometimes reaching a length of forty feet or more, a width of five feet at the center, and capable of carrying thirty men or large quantities of material. Also often used in the early period were flat-bottomed scows introduced by the white man, which the French called bateaux, and the British were more likely to refer to, especially in the smaller sizes, as john-boats. These were not so easily upset as the dug-out canoes, and could carry a heavier load for the same size boat with more safety, but were slow and often difficult to handle.

Since the two principal cities of Pennsylvania were at opposite ends of the state, and one or the other could be reached by water from a part of the area, early Pennsylvanians relied very largely on the use of flatboats. These flat, almost square craft could be readily built from the plentiful lumber available almost anywhere in the state, and were used to float farm produce or other goods downstream, guided by a sweep oar in the stern and sometimes another in front, and usually tying up to a tree at night and travelling only by day. Arriving at the city or other market, the boatman sold not only his produce but his boat as well, the latter usually for its value as lumber, and returned home either afoot or on horseback. Emigrants headed for Kentucky or other ports of the Ohio valley usually went on foot or by horse across the mountains, and purchased boats at points along the Monongahela River or at Pittsburgh to float down the remainder of the way.

These flatboats were so much used by pioneer families headed down-river that they often were referred to as Kentucky boats. They varied from twenty to a hundred feet in length and were from twelve to twenty feet wide. A Kentucky boat of twelve-foot width usually cost about a dollar per foot of length. When used for carrying freight, a good-sized flatboat might hold up to forty or fifty tons, and require five to seven men to handle it. These craft were made of various materials, oak being considered best, and were carefully caulked to keep leakage as low as possible. Some which sharpers foisted on the unwary were so fragile and poorly built that they became almost a proverb for being easily wrecked: a judge in a Pittsburgh trial once stated that he believed a certain Kentucky boat had been wrecked by running into a large catfish.

Kentucky boats carrying settlers down the Ohio were usually built with low gunwales and flat bottoms. At one end there would generally be a shed, which usually included a sandbox fireplace for cooking, and its shelter roof often served as a sort of observation deck. Sometimes these cabins were completely walled in, and on large craft might include several rooms. However, the ordinary one-family boat had only a shelter shed. The family goods might be piled almost anywhere on the boat, and livestock such as a cow, horse, or pig, tethered at one or another corner. After the great lumber business developed on the upper Allegheny, Susquehanna, and other rivers, people of these districts often took advantage of rafts of logs or squared timber to transport themselves and their produce downstream.

Soon after the settlement of any area along a navigable river people would begin building larger and larger boats, even if frequently these could be run downstream only. Many seagoing vessels were built along the Delaware in the East, and in the Pittsburgh district oceangoing vessels were built and sent down the rivers even before the year 1800. They were usually loaded



Lumber raft on the Allegheny River, leaving Warren, Pennsylvania, for Pittsburgh.

—Courtesy, ***"Pittsburgh Press."***

with produce of various kinds, and sailed down to the nearest seaport, where ship and cargo alike were often sold. There were instances, however, where because of failure to find a ready market the ship's crew sailed her to the West Indies or sometimes even as far as Europe.

There is a fine story of such a ship whose master was arrested on putting in at a harbor in Europe, on the grounds that there was no such port on earth as Pittsburgh, from which he claimed to come. According to the story, the master asked for a map, with his finger traced the course of the rivers up from New Orleans, and demonstrated that although fifteen hundred miles from the mouth of the Mississippi River, Pittsburgh was indeed a port. Unfortunately no two stories agree on whether the incident occurred at Leghorn, Italy, or Marseilles, France, or some port on the Baltic in the Russian Empire; or on the names of the people involved. If such an incident ever did occur, the location, the name of the ship, and identities of the people are lost in the mists of time.

But downstream traffic by flatboat and ocean-going ships proved insufficient in the trade of growing districts. What was vitally needed was something that would provide transport upstream as well as down. On the Delaware and the Susquehanna the answer was the Durham boat, a canoe-shaped barge propelled by oars or poles and drawing only twenty inches of water. It was first built of wood, later of iron, and was first designed about 1750 by Robert Durham, the manager of the Durham Iron Works on the Delaware River.

On western waters the answer to this problem of transportation was a somewhat similar boat, first called a barge, or ark, and propelled by sails, oars, poles, or by cordelling, which meant pulling the boat upstream by means of ropes carried by men along the banks, and usually operated or braced by taking a turn around a tree trunk.

Quite early, however, someone had the idea of steadying its progress by building it with a keel. Thenceforth known as a keelboat, it became of great importance on western waters until the coming of steam.

Downstream these boats were able to travel easily by rowing, sailing, or merely drifting with the current, and could often make as much as thirty miles in a day.The usual way of coming upstream was by setting poles, about twenty feet long, which were pressed against the bottom of the river to push the boat forward.

Keelboats were as much as seventy or eighty feet long, and ten to fifteen in width at the broadest point. Each one had a walk or gangway all around the edge where boatmen stood when manipulating their poles. In pushing a heavy load, or against a strong current, the boatman would place the upper end of his pole against a big pad on his shoulder, then lean forward and creep toward the back of the boat almost on hands and toes. A large boat might have as many as seven pairs of boatmen with poles, walking backward in line. Sometimes at the end of the walk they would lift their poles and return in line to the front of the boat. At other times the man reaching the stern of the boat first would step out of line and go to the bow, thus keeping a regular succession of men walking along the side of the boat. A steerman in the stern of the boat guided it with a sweep oar, and one or two men (bowsmen) were stationed in the prow with poles to fend the boat off from snags, rocks, or floating logs.

Because of the hard nature of the work, the keelboatmen became the toughest and most ungovernable of men, continually fighting and roistering when off duty. In all but the coldest weather, they usually went stripped to the waist and often wore only a loin cloth. Their skin became so tanned from sun and wind they could hardly be told from Indians.

The toughest and most famous of all these keelboatmen was one Mike Fink, who was born on a farm a little way south of Pittsburgh, and took to the rivers shortly after 1800, when he was about twenty years old. He was a crack shot with a rifle, and a dangerous man in a rough and tumble fight, but ordinarily reputed to be honest.

Morgan Neville, a Pittsburgh and Cincinnati newspaperman who as a boy had known Mike Fink, gives perhaps the best description ever written of the world of the keelboatmen:

> Mike Fink may be viewed as the correct representative of a class of men now extinct; but who once possessed as marked a character, as that of the Gipsies of England or the Lazaroni of Naples. The period of their existence was not more than a third of a century. The character was created by the introduction of trade on the Western waters; and ceased with the successful establishment of the steam boat.
>
> There is something inexplicable in the fact that there could be men found, for ordinary wages, who would abandon the systematic but not laborious pursuits of agriculture to follow a life, of all others except that of the soldier distinguished by the greatest exposure and privation. The occupation of a boatman was more calculated to destroy the constitution and to shorten the life than any other business. In ascending the river, it was a continued series of toil, rendered more irksome by the snail like rate at which they moved. The boat was propelled by poles against which the shoulder was placed; and the whole strength and skill of the individual were applied in this manner. As the boatmen moved along the running board with their heads nearly touching the plank on which they walked, the effect produced on the mind of an observer was similar to that on beholding the ox rocking before an overloaded cart. Their bodies, naked to their waist for the purpose of moving with

> greater ease, and of enjoying the breeze of the river, were exposed to the burning suns of summer, and to the rains of autumn. After a hard day's push, they would take their "fillee" or ration of whiskey, and having swallowed a miserable supper of meat half burnt, and of bread half baked, stretch themselves without covering on the deck, and slumber till the steersman's call invited them to the morning "fillee."
>
> On board of the boats thus navigated, our merchants entrusted valuable cargoes without insurance, and with no other guarantee than the receipt of the steersman, who possessed no property but his boat; and the confidence so reposed was seldom abused.

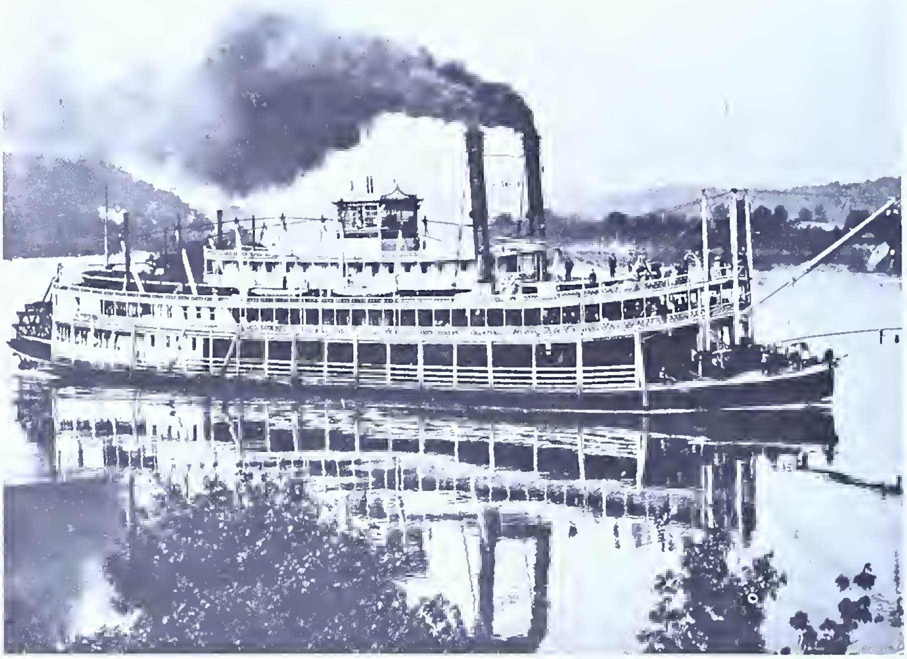
Despite the importance of the keelboat in its earlier days, it was quite unable to compete with steam, when steamboats came to the western rivers. Keelboats continued in use, however, until the time of the Civil War or later, on streams too small for steamboat navigation, and even on the Ohio River in periods of extremely low water.

The Steamboat

The site of Philadelphia was chosen largely because of the excellent harbor which provided world-wide commerce by ships coming up the Delaware River, although the city is approximately a hundred miles distant from the ocean. Even today, Philadelphia is one of the largest ports in the United States as to tonnage of export and import trade, and its harbor facilities are second only to those of New York City. To permit the approach of the largest present-day ships, government dredges have opened a channel 800 feet or more in width and 45 feet deep at low tide.

Erie has an excellent, well protected harbor and from the beginning was a center of trade along and across the Great Lakes. Since the building of the Welland Canal in 1843 (rebuilt and enlarged in 1871 and 1912), and especially since the recent opening of the St. Lawrence Seaway, it has been of growing importance as a port for ocean-going vessels.

With the beginning of the practical development of steam power, men immediately began to consider its use for propelling boats, and as early as 1787 John Fitch of Connecticut was in Philadelphia working on the development of a steamboat. His



Steamboat "Queen City," in service from 1897 to 1933.
—Courtesy, "Pittsburgh Press."

models were crude and primitive but he did succeed in building boats which ran four or five miles an hour, operating with mechanical oars and later paddles in much the same fashion as an Indian canoe. He even advertised regular service on the Delaware in a Philadelphia paper in 1790, but apparently the boats were not serviceable enough for him to make a success of the operation.

Even after Robert Fulton's steamboat the *Clermont* showed that short steamboat trips were not only possible but practical, steam came into use but slowly on eastern Pennsylvania rivers, even where the easy current and deep water seemed especially designed for such craft. The Susquehanna with its shallow water, swift current, and numerous rocks and ripples, was never a good stream for such craft.

Perhaps one reason John Fitch's steamboats received so little recognition was that they had to compete with already well-established sailing vessels on the Delaware, while their construction, with weak boilers and wooden cylinder heads, made them slow and undependable.

The first important steamboat on the Delaware was the *Phoenix,* built by John Stevens, and running from Philadelphia to Bristol, later to Bordentown, New Jersey. With the *Philadelphia,* built in 1813, and others, John and Robert L. Stevens provided part of a fast and convenient water and land combination service to New York. The land portion was run at first by stagecoach, later by railroad, and continued until about 1875. Much of the time there were two competing lines, the Union (Stevens) and the Citizens Line, in such fierce opposition that sometimes passage from Philadelphia to New York cost only a dollar—a third of the ordinary fare.

Philadelphia to Cape May service began in 1824, and after that year there were steamship lines on the lower Delaware to Wilmington and Baltimore. As early as 1813 a Baltimore company offered steamboat service to Philadelphia, but it was little used for a decade.

Efforts to use steamboats above tidewater on the Delaware and on the Schuylkill and smaller rivers never proved successful. But on the deeper part of the Delaware, packet lines continued to operate until after World War I.

The opening of the mouth of the Mississippi, however, had increased the trade to New Orleans so much that it was almost impossible for keelboats and flatboats to keep up with the demand. Despite the fact that many people who knew the Ohio River believed it was too swift and shallow for successful steamboat operation, Fulton and his partner, Robert Livingston, quickly moved to test the possibility.

Early in 1809 they sent Nicholas J. Roosevelt, a New York engineer, and his wife, Lydia, daughter of the famous architect, Benjamin Henry Latrobe, to Pittsburgh to determine whether the waters would permit steamboat navigation.

Fitting out an unusually well-built flatboat, the Roosevelts and their servants floated down the Ohio and the Mississippi, taking measurements of water depth and currents, and even arranging to open coal mines along the way for possible future use by steamboats. They arrived at New Orleans about December 1, and reached New York early in 1810 by ocean steamer.

Returning in the spring, Roosevelt and his wife took up residence at Pittsburgh, where he began gathering material for the first steamboat built on western waters. This craft, christened the *New Orleans,* was built in a small bay at the mouth of a creek running into the Monongahela River about a mile from where it joins the Allegheny to form the Ohio. The boat was 168 feet long and 20 feet wide, with a single engine in the hold to drive two side wheels. It had two cabins, a comfortable one near the stern with four beds for the ladies, and a larger one forward for the gentlemen.

After many delays, the boat was completed at a cost of $38,000 and tested by a few runs on the lower Monongahela. On October 20, 1811, the *New Orleans* began the trip downstream, the first ever made on the Ohio River by any craft driven by steam.

A great deal of hearsay has crept into history books on this subject. Research in the newspapers of the towns passed by the *New Orleans* on the trip shows that she left Pittsburgh on October 20, passed Marietta two days later, and steamed past Cincinnati on October 27, without stopping. Late on the night of October 31, she reached Louisville, Kentucky, where her arrival on a bright moonlit night created quite a sensation. Held up by low water at the falls there, Roosevelt took the boat back up to Cincinnati, and finally got water enough to continue downriver in November. Despite considerable dangers caused by the great earthquake which struck the region of the lower Ohio and the middle Mississippi about the end of 1811, he reached Natchez, Mississippi, just after the turn of the year, and arrived in New Orleans on January 10, 1812.

The *New Orleans* never returned farther upstream again than a little above Natchez. And when Fulton and his partner began building the *Vesuvius* and the *Buffalo* at Pittsburgh, both of these were intended for trade on the lower river. But Pennsylvanians had other ideas. In the summer of 1813, Daniel D. Smith altered a river barge at Pittsburgh, using an engine invented by Daniel French. The craft, called the *Comet,* was sent down to New Orleans and also made a few trips to Natchez, but apparently was unsuccessful in the trade. She was soon dismantled and her engine was used to run a cotton gin.

During the spring of 1814 a boat 80 feet long and 29 feet across was built near Brownsville on the Monongahela River and named the *Enterprise*. That summer she made two voyages to Louisville and in December carried a cargo of war material from Pittsburgh to New Orleans where she was used by General Jackson in his campaign against the British. Following the end of the war, the *Enterprise* left New Orleans on May 6, 1815, and reached Louisville 25 days later. Shortly afterwards, she continued the run upstream to Pittsburgh, being the first steamboat ever to demonstrate that such craft could handle the upstream voyage.

Quickly the number of new boats on the Ohio and tributaries mushroomed until by 1837, a survey showed 413 different steamers in operation. Safety precautions had not kept pace with other factors in the trade, however, and in an average year, two hundred people or more might die in fires, explosions, and sinkings of steamboats.

Many of the boats were extremely ornate in design, and the faster craft raced with one another by agreement or when they happened to be plying the same waters, the winner gaining a great deal of prestige and a high type of trade both in freight and passengers. A winning boat would mount a rack of deer's antlers, which she had to give up if beaten, to the one that defeated her.

David Stevenson, an English engineer who visited America in 1838, describes the craft of his day:

> The vessels on the western waters vary from 100 to 700 tons burden, and are generally of a heavy build to enable them to carry goods; they have a most singular appearance, and are no less remarkable as regards their machinery. They are built flat in the bottom, and generally draw from six to eight feet of water. The hull is covered with a deck at the level of about five feet above the water, and below this deck is the hold, in which the heavy part of the cargo is carried. The whole of the machinery rests on the first deck; the engines being placed near the middle of the vessel, and the boilers under the two smoke chimneys. The fire-doors open towards the bow, and the bright glare of light thrown out by the wood fires, along with the puffing of the steam from the escapement pipe, produce a most singular effect at night, and serve the useful purpose of announcing the approach of the vessel when it is still at a great distance. The chief object in placing the boilers in the manner described, is to produce a strong draught in the

fireplace. The other end of the lower deck, which is covered in, and occupied by the crew of the vessel and the deck passengers, generally presents a scene of filth and wretchedness that baffles all description. A staircase leads from the front of the paddle boxes on each side of the vessel, to an upper gallery about three feet in breadth. This surrounds the whole after part of the vessel, and is the promenade of the inhabitants of the second deck. Several doors lead from the gallery into the great cabin, which extends from the funnels to within about 30 or 40 feet of the stern of the vessel: the aftermost space is separated from the great cabin by a partition, and is occupied by the ladies. The large cabin contains the gentlemen's sleeping berths, and is also used as a dining room. This part of the western steamers is often fitted up in a gorgeous style; the berths are large, and the numerous windows by which the cabin is surrounded give abundance of light, and what is of great consequence in that scorching climate, admit a plentiful supply of fresh air.

From the gallery surrounding the chief cabin, two flights of steps lead to the hurricane deck, which in many of the steamers is at least 30 feet above the level of the water. The wheelhouse in which the steersman is placed, is erected on the forepart of this deck, and the motion is communicated to the helm by means of ropes or iron rods, as in the eastern steamers.

The western water steamers are propelled sometimes by one, and sometimes by two engines. When two engines are used the ends of the piston rods work in slides, and the connecting rods are both attached to cranks on the paddlewheel axle, placed at right angles to each other, as is the case in most of the steamers in this country. When only one engine is used, which is more generally the case, a large fly wheel, from 10 to 15 feet in diameter, is fixed on the paddle-wheel shaft, and serves to regulate the motion of the engine, and enables it to turn its centres. The cylinders are invariably placed horizontally, and the engines always constructed on the high-pressure principle.

Explosions, as may be naturally supposed, are of very frequent occurrence; and, with a view to cure this evil, several attempts have, at different periods, been made to introduce low-pressure engines on the western waters, but the cheapness of high pressure engines and the great simplicity of their parts, which require comparatively little fine finishing and good fitting, certainly afford reasons

> for preferring them to low-pressure engines, in a part of the country where good workmen are scarce, and where the value of labor and material is very great.
>
> The steamers make many stoppages to take in goods and passengers, and also supplies of wood for fuel. The liberty which they take with their vessels on these occasions is somewhat amusing, and not a little hazardous. I had a good example of this on board of a large vessel, called the 'Ontario.' She was sheered close in shore among stones and stumps of trees, where she lay for some hours taking in goods. The additional weight increased her draught of water and caused her to heel a great deal, and when her engines were put in motion, she actually crawled into deep water on her paddle wheels. The steam had been got up to an enormous pressure to enable her to get off, and the volume of steam discharged from the escapement pipe at every half-stroke of the piston, made a sharp sound, almost like the discharge of firearms, while every timber in the vessel seemed to tremble, and the whole structure actually groaned under the shocks.

Baron Franz A. R. von Gerstner, who arrived late the same year (1838), was particularly interested in the accommodations and the prices charged:

> The steamboats in the West, or upon the western waters, are throughout very flat, and go, when loaded, generally five feet deep; some, however, only 30 to 36 inches. When the water in a river is only 30 inches deep, the steamboat contains only the engine and fuel and the cabins for the men, and flatboats loaded with goods are taken in tow. The passenger boats have two decks, the upper one is for the cabin passengers. The elegant boats contain a large, splendidly furnished and ornamented saloon, used as the dining room, and an adjoining saloon for the ladies. The saloons are surrounded by small apartments (state rooms), each of which contains two berths, and round the state rooms is an open gallery, to which a door opens from each state room. Such a vessel offers to a European an imposing and entirely novel aspect.
>
> In the year 1818, a cabin passenger paid for a passage in a steamboat, from New Orleans to Louisville, a distance of 1450 miles, $120, and for returning, $70; the passage up took 20 days and down 10 days; at present cabin passengers pay in the most elegant steamboats, $50 for a passage up, and $40 for one down-stream,

> while they go up in six, and down in four days. The charges include boarding, which, considering the abundance and choice of victuals, etc., ought to be estimated at $2 per passenger day. The fare is, therefore, now, for the passage alone, taking the average between a trip up and down (excluding board) 2.41 cents per mile. Less elegant boats take cabin passengers up in eight days for $30, and for $25 down in five days, which, after deducting $1.50 per day for board, gives only 1.22 cents per mile at an average between a trip up and down.
>
> Upon the lower deck of these steamboats, which is a few feet above the surface of the water, are the deck passengers who provide their own meals, and pay for the same passage of 1,450 miles only $8; if they assist the crew in carrying the wood upon the boat, they pay only $5. In the former case they pay, therefore, per mile, 0.55 cents.
>
> Merchandise was carried before the introduction of steam navigation in sailing vessels, which took a load of 150 tons; in the year 1817, the charge for freight per pound, from New Orleans to Louisville, was seven to eight cents; in 1819 the steamboats commenced carrying freight, and immediately reduced the charge to four cents per pound. At present, the charges per one hundred weight, from New Orleans to Louisville, are, according to the quality of the goods and the season, at least 33 cents, and the most, $1.50. At an average, they may be taken at 62½ cents for the distance of 1,450 miles. This makes 86 cents per ton per mile.

Throughout the early steamboat period, one of the great handicaps to navigation was the fact that in dry periods most of the rivers fell too low for boats to run successfully. This was particularly true of the Monongahela River, which had a heavy trade, both from merchandise sent westward to Brownsville on the National Pike and from the coal shipments from the numerous mines that lined its banks.

In 1838 a group of citizens of the district organized the Monongahela Navigation Company, which secured the right to charge tolls by building a series of locks and dams that kept the water at a stage high enough to be navigated at all times, except occasionally when periods of bitter cold produced heavy ice.

The first dams were placed in operation in 1841, and by 1845 the improvement was completed all the way to Brownsville. Later, by the addition of other dams the river was made navigable all the way to its head at Fairmont, West Virginia, although the upper dams were built by the United States Government, which had taken over control of all navigable rivers and in 1897 purchased the Monongahela Navigation Company.

Just at the time when the western steamboats were in their heyday, the arrival of the railroads in the 1850's suddenly plummeted them into the depths of a depression which continued until after the end of the Civil War. Unable to compete with the new faster transportation provided by the rails, many fine steamboats rotted at the water's edge, while others continued operation at a loss or were barely able to make ends meet.

The boom which followed the end of the Civil War brought another period of prosperity, and packet boats more magnificent than before once again plied the rivers, and in greater number. The rebirth was but brief, however. In the 1880's, railroads were built along the valleys of most of the larger rivers, and once again the steamboat trade gradually began to decline.

One of the great hindrances to the steamboats continued to be low water in times of drought. The United States Government made plans to slackwater the entire length of the Ohio River by means of locks and dams, beginning with the Davis Island Dam just below Pittsburgh, put into service in 1883. But the program was not completed for almost fifty years, and by the time all was done, the day of the packet boat had faded into twilight.

TOWBOATS

Old man river was gone, but new man river was already well along on his way. For back in June of 1845, Daniel Bushnell of Pittsburgh had tried something new. Business was bad, and looking for a load of any kind that he could get he lashed three coalboats to the *Walter Forward* and towed them down the Ohio River to Cincinnati, loaded with 20,000 bushels of coal. As we have seen, this was not the first towing, but it was the beginning of its use as a special form of transport.

Towing knees had not been invented then, and instead of the familiar square bow and stern of today's towboats, the *Walter Forward* was pointed at both ends as was the custom of the day. Nor could the wooden barges of his day stand the pressure of a

Steamer "Sprague" towing a fleet of coal barges, Ohio River, May, 1904.

towboat pushing with its whole force against the end of a barge. To avoid this difficulty, Captain Bushnell lashed one coalboat on each side of the *Walter Forward,* and the third between them, far enough ahead of his boat to leave a "duck-pond" out in front between the steamer and the barge ahead.

The *Forward* was only fourteen feet wide, which was narrower than the coalboat up ahead, a fact which made it a convenient maneuver. Other boatmen may have made fun of the odd arrangement as they saw him taking a load down river. But they were quick to see its advantages, and before long many others followed suit. Captain Hugh Smith towed coal in 1851 with the old packet boat *Lake Erie* and about the same time, Bushnell and several partners built the *Black Diamond* which took four coalboat loads to Cincinnati on its first voyage. In 1852 the *Sea Gull* arrived in Louisville with 60,000 bushels of Pittsburgh coal. The *James Nelson* earlier that year had cleared the Pittsburgh harbor with two barges and four scows loaded with 60,000 bushels of coal consigned to St. Louis, according to Captain Frederick Way, Jr., the distinguished river historian. In 1854 the *Crescent City* took three coal boats and a barge of coke to New Orleans, a total of 64,000 bushels.

By the time the *Coal Hill* was built in 1856, the method had progressed so far that her picture looks almost like that of any coal towboat of today, except that she was made of wood instead of steel, and had smokestacks and a stern wheel. The modern method of placing barges in a "tow" to push them was designed by Bushnell, but first put into practice by his former mate, Captain J. J. Vandergrift.

Previous to this time and for many years afterwards, a great deal of the coal shipped down river was taken on what were known as floated coalboats, usually tied together in pairs with a crew of 12 to 15 men and turned loose on a freshet to float down the river at the speed of the current, guided by sweep oars operated by the crew. But it was quickly recognized that accidents could be avoided and time and money saved by using a towboat to guide a number of coalboats lashed together into a tow.

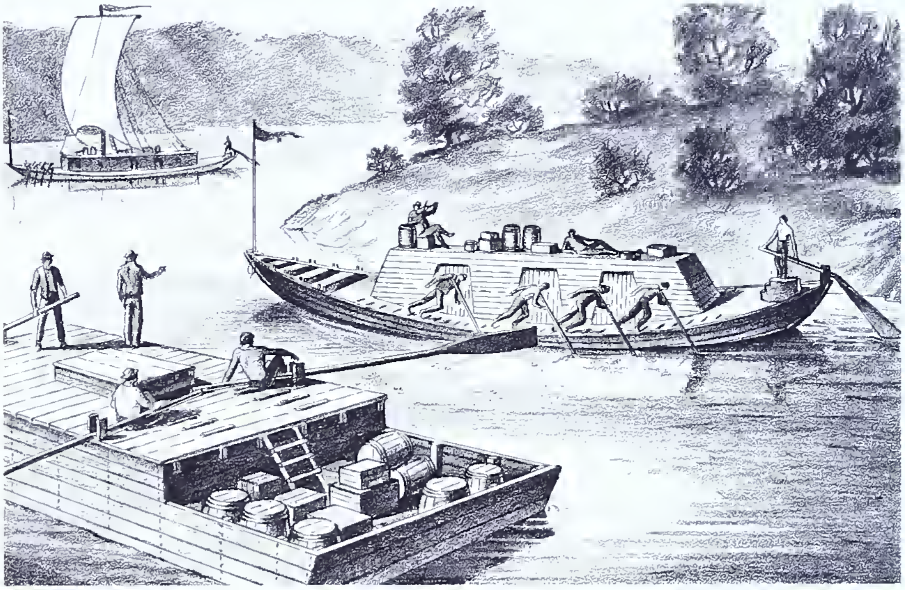
For years coal brought down from the slackwatered Monongahela River was anchored in the pool at Pittsburgh, until sometimes the rivers were almost blocked by the vast acreage. These boats of coal would wait until a rise in the Ohio River provided sufficient water for them to be taken downstream, and then almost the whole coal fleet would start out together, each boat and its tow clearing the pool on a pre-arranged schedule.

Since it was necessary to take as much coal as possible while a freshet lasted on the river, towboats increased greatly in size and sometimes hauled tremendous cargoes. The *Joseph B. Williams,* built at Freedom, Pennsylvania, and fitted out at Pittsburgh in 1876, was 200 feet long by 40 feet in width and drew only 6½ feet of water. In April, 1898, this craft hooked into a tow of 52 coal boats, 4 barges and 4 flats, a total of 1,453,000 bushels. This tow was 886 feet long and 322 feet wide, and including the towboat itself, the overall length was 1,098 feet. Actually the start on March 23 was made with only 44 coalboats and 3 loaded flats of fuel, and it was not until the *Joseph B. Williams* reached the Mississippi at Cairo that she picked up the final coalboats, barges, and flats that made up her tremendous tow. She hauled the entire load for 439 miles to Harwood, Louisiana, and made two trips from there to New Orleans.

After the Ohio River also was slackwatered so that it had very little current, towboats were necessary to push the barges of coal or other materials being taken either down river, or back up against the slight force of the water.

Today, only an occasional excursion boat carries passengers on the rivers of Pennsylvania. And even these are no longer steam sternwheelers or sidewheelers, being powered by diesel engines and driven by screw propellers.

Yet the rivers continue busier than ever before, boats with up to 3,200 horsepower hauling tremendous tows of coal, steel, gasoline, and other freight up and down. In many years the Monongahela River surpasses the Panama Canal in cargo tonnage.



Keelboats and other river craft. From Leland D. Baldwin, "The Keelboat Age on Western Waters."

—Courtesy, University of Pittsburgh Press.

III. THE PENNSYLVANIA CANALS

THE traveller who wished to cross Pennsylvania at his ease a century and a quarter ago had the choice of two means of travel. He could ride a stagecoach over the dusty or muddy highways, depending on whether the weather was wet or dry; or he could travel comfortably, not only east and west across Pennsylvania, but also up and down many of its valleys by the Pennsylvania canals—as remarkable a system of public works as any state in the world had produced up to that time. Although the Erie Canal was more famous, was opened before Pennsylvania's Main Line Canal, and continued in operation longer, the Pennsylvania canals faced tougher obstacles and solved the problems with greater skill and ingenuity than anything which had been achieved up to that period. Their total mileage was greater than that of the Erie Canal three times over, and their engineering was the wonder and amazement of the entire world.

Although a canal across such rugged mountains may seem to us almost unthinkable, the idea was as natural to men of Pennsylvania in the 1700's as that of a railroad or airline is to us today. Canals had long been in use in Europe, and some had already been built in the colonies along the seacoast. One of George Washington's great concerns as he travelled to and from the present location of Pittsburgh was the possibility of finding a route for a canal which would link western Pennsylvania with the eastern seaboard and permit an increased trade that could bring quick development of the new country. As Walter Leuba has said: "Canals were built for economic reasons in Pennsylvania; they had a vigorous and short life . . . yet these long avenues of water can carry you or your goods inexpensively in any day or age if you are not in a hurry. . . . Canals are waterways, and waterways, natural or artificial, are perhaps the most engaging and enhancing aspect of any landscape, making a city of enchantment of Venice and a series of picturesque prospects of the realistic daily activity of Holland."

Plans to connect the Susquehanna and Schuylkill rivers by a canal running through the Swatara and Lebanon valleys, were seriously discussed as early as 1771. Twenty years later the Commonwealth chartered the Schuylkill and Susquehanna Navigation Company for the purpose of "opening a canal and lock

Union Canal, Lebanon, Pennsylvania, about 1850, from an old tintype.

navigation" between the Schuylkill and Susquehanna rivers, and the Delaware and Schuylkill Navigation Company to build a canal from the Delaware River at Philadelphia to the Schuylkill at Norristown.

Neither company got very far, largely for lack of money. But in 1811 they combined to form the Union Canal Company, with the right to extend its line from Philadelphia to Lake Erie or any other place in the state. Work was seriously resumed in 1821 and by 1828 the company opened a 78-mile canal between Reading on the Schuylkill and Portsmouth (now part of Middletown) on the Susquehanna. This Union Canal was 36 feet wide at surface level, tapering to 24 feet at the bottom, and carried four feet of water. It had 93 locks, or a little more than one to each mile, to get boats up and down the 519-foot difference in elevation. Each lock was 75 feet long and 8½ feet wide. Boats were raised in much the same fashion as on modern canals, by running them into a lock, and then after the gates were shut, letting water flow into the lock chamber until the level rose to that of the upstream part of the canal. In going down, the plan was reversed. The boat was run into a full lock chamber, the upper gates closed, and the water allowed to flow out until the boat had sunk down to the level of the canal below.

Strictly speaking, the Union Canal was not Pennsylvania's first. In York County the Conewago Canal, only a mile and a quarter in length, had been placed in operation in 1797 to allow river craft on the Susquehanna to go around dangerous Conewago Falls.

Soon a whole network of canals had sprung up in eastern Pennsylvania, all built wholly or principally by private capital. The longest of these was the Schuylkill Canal, running from Port Carbon to Philadelphia. It was in operation in 1822, but only for local navigation until 1825, and was largely intended for hauling anthracite coal. It connected with the Union Canal at Reading, and so was able to carry freight directly from the Susquehanna to Philadelphia.

Almost as long as the Union Canal, and built about the same time, was the canal of the Lehigh Coal and Navigation Company, running a little over seventy miles from White Haven to Easton. In addition, there were the Delaware and Hudson Canal from

Honesdale, Pennsylvania, to Rondout, New York; the Pine Grove feeder, running from the Union Canal to Pine Grove; the Susquehanna and Tidewater, from Columbia, Pennsylvania, to Havre de Grace, Maryland; and the Spring Creek and Bald Eagle Navigation Canal from Bellefonte to Bald Eagle Cut, all from 20 to 30 miles long.

Shorter but still important canals were the Pennsylvania and Ohio, running from New Castle, Pennsylvania, to Akron, Ohio; the Conestoga Navigation Canal from Lancaster to the Susquehanna River; the Codorus Navigation Canal, from York to the Susquehanna River, and the Junction Canal, from Athens, Pennsylvania, to Elmira, New York. The Pennsylvania and Ohio Canal, often referred to as the "Cross-Cut Canal," connected the state-owned Pennsylvania Canal system with canals in Ohio.

Although there was a good deal of sentiment for a publicly owned canal system in the Keystone State, nothing was done until after the completion of the Erie Canal in 1825. Then, faced with a serious loss of trade, Pennsylvanians decided to act. A Canal Commission was directed to make a survey for a Main Line Canal between Pittsburgh and Philadelphia, with several branches, the most notable one to run from Pittsburgh to Lake Erie. Three weeks before the commissioners were ready to report, the lower house passed a canal bill, and on February 26, 1826, the state finally approved a vast but unplanned system of public improvements to serve as wide an area as possible. The key portion of this was to be the great Main Line Canal, but no special taxes were provided to pay for it, and only $300,000 appropriated for the purpose.

Construction was begun almost at once, and parts of the Main Line Canal were placed in operation as early as 1828, although it was not until 1834 that through traffic could be carried all the way from Philadelphia to Pittsburgh. As at last placed in operation, the plan included a state-owned railroad from Philadelphia to Columbia, on the Susquehanna River between Lancaster and York; a canal up the Susquehanna and the Juniata past Harrisburg to Hollidaysburg; the Allegheny Portage Railroad, forty miles in length and including five pairs of inclined planes to cross the mountain ridges between Hollidaysburg and Johnstown, and a canal from there down the Conemaugh and the Kiskiminetas to

Freeport, and down the northwest bank of the Allegheny River to Pittsburgh.

Coming into Pittsburgh in its North Side, then the city of Allegheny, the canal had a terminal there. But its main traffic was carried over the Allegheny River, on a wooden aqueduct, to a canal basin in what was then the eastern portion of Pittsburgh, located near the present-day bus terminals and the Pennsylvania Railroad station. From large basins at this point, the canal continued through a tunnel to the bank of the Monongahela River where there were four locks permitting the boats to go down to river level, and transfer cargo onto river steamers.

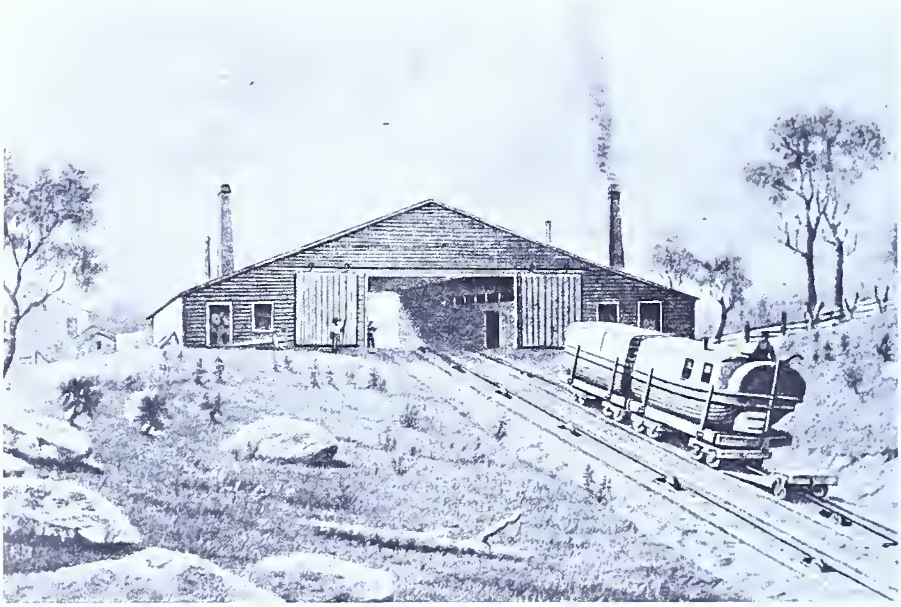
Instead of a canal from Pittsburgh to Erie, the state built one from Beaver to Erie, following the course of the Beaver River and French Creek. Trade between the Main Line Canal and this feeder was transferred by riverboat from Pittsburgh.

Despite the haphazard planning, and a great deal of political influence which hindered its economical operation, the canal and railroad system quickly became a major artery of trade and transport across Pennsylvania. The Portage Railroad was considered a marvel of achievement, and included the first railroad tunnels ever dug in America; the canal district between Johnstown and Pittsburgh had a tunnel 817 feet long. It is interesting to note that the first four tunnels in America were dug as part of the Pennsylvania canal system. These included one at Auburn, on the Schuylkill Canal, built between 1818 and 1821; a second near Lebanon on the Union Canal, 1824 to 1826; a third at Tunnelton, Indiana County, and an 825-foot tunnel through Grant's hill in Pittsburgh, both parts of the Main Line Canal.

Wherever possible, canals were built alongside rivers or large creeks to provide a needed water supply; but not in the beds of these streams, because it was difficult to keep their water level constant in times of flood or drought.

Beside the canal was a towpath, where horses or mules were used to tow canalboats. Individuals or companies used their own boats, paying a toll for the right to pass over the canal. It had been originally planned to operate the Allegheny Portage Railroad by horsepower also, but steam was later substituted.

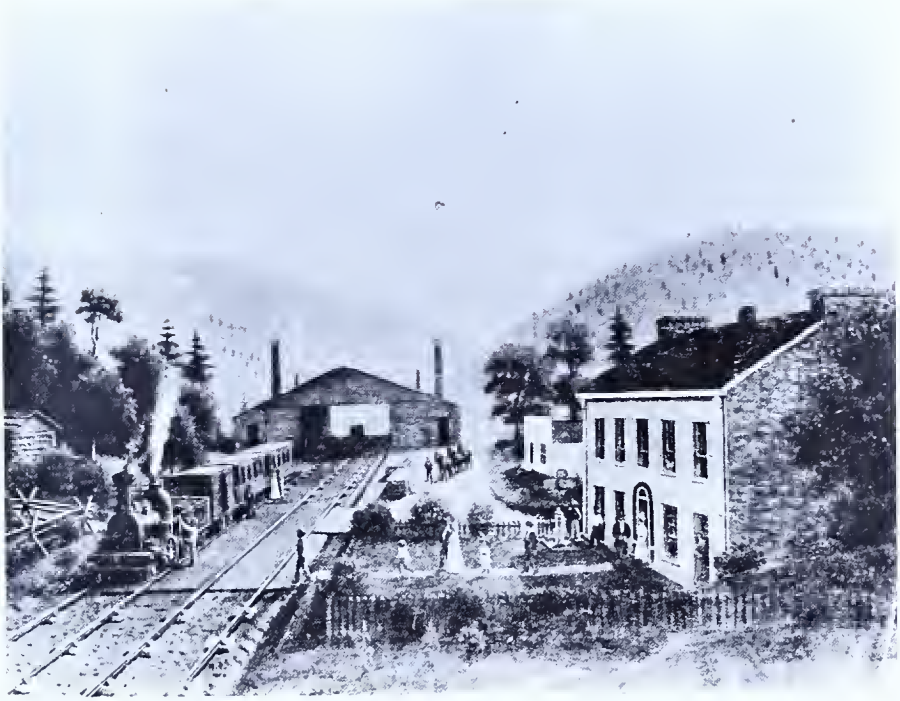
At first the canalboats were unloaded upon reaching the Portage Railroad and contents shipped on cars to the next canal sec-



Sectional canal boat ascending Plane No. 6 of the Allegheny Portage Railroad. The cable cars were moved by stationary steam engines at the top of each plane.
—Courtesy, "Pittsburgh Press."

tion. However, the invention of sectional canalboats, which could be hooked together to form conveniently sized tows, soon permitted boats or sections of boats to be hauled over the Portage Railroad on flat cars without unloading. In March, 1856, a writer for *Harper's Magazine,* gave an interesting description of the Portage Railroad:

> From Hollidaysburg, at the base of the Alleghenies, the boats and cars were, at the time of our visit, transported over the mountains at Blair's Summit Gap by a portage railroad. This is a construction of great extent and enterprise. It is forty miles in length, and in its ascent and descent overcomes an aggregate of two thousand five hundred and seventy feet. There are on the route ten inclined planes (five up, and five down), varying in inclination from 4-1/8 to 5-6/8 degrees; a tunnel eight hundred and seventy feet long through the Staple Bend Mountain of the Conemaugh; and also four great viaducts —one of which, over the Horse-Shoe Bend, is a semicircular arc of eighty feet span. The cars are elevated by stationary steam engines at the head of each plane. The cost of this road was nearly two million dollars.



Lemon House, an inn and passenger station on the summit line of the Allegheny Portage Railroad, near Plane No. 6.

But the finest and historic description of the Pennsylvania Main Line Canal was given by Charles Dickens, who passed over it in its heyday, on a trip from Harrisburg to Pittsburgh in 1842:

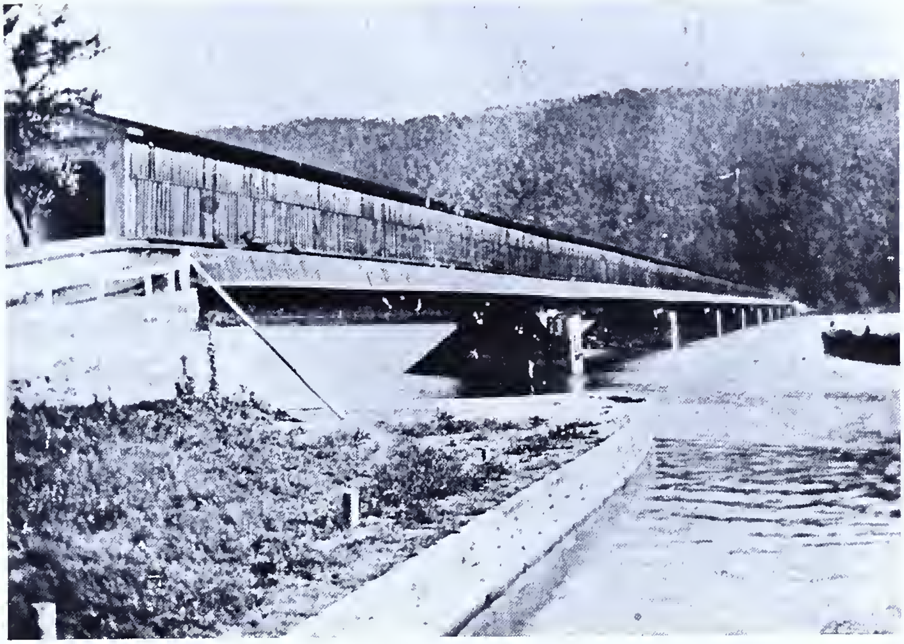
> It still continued to rain heavily, and when we went down to the Canal Boat (for that was the mode of conveyance by which we were to proceed) after dinner, the weather was as unpromising and obstinately wet as one would desire to see. Nor was the sight of this canal boat, in which we were to spend three or four days, by any means a cheerful one; as it involved some uneasy speculations concerning the disposal of the passengers at night, and opened a wide field of inquiry touching the other domestic arrangements of the establishment which was sufficiently disconcerting.
>
> However, there it was—a barge with a little house in it, viewed from the outside; and a caravan at a fair, viewed from within; the gentlemen being accommodated as the spectators usually are in one of those locomotive museums of penny wonders; and the ladies being partitioned off by a red curtain, after the manner of the dwarfs

and giants in the same establishments, whose private lives are passed in rather close exclusiveness.

We sat here, looking silently at the row of little tables which extended down both sides of the cabin, and listening to the rain as it dripped and pattered on the boat, and splashed with a dismal merriment in the water, until the arrival of the railway train, for whose final contribution to our stock of passengers our departure was alone deferred. It brought a great many boxes, which were bumped and tossed upon the roof, almost as painfully as if they had been deposited on one's own head, without the intervention of a porter's knot; and several damp gentlemen, whose clothes, on their drawing round the stove, began to steam again. No doubt it would have been a thought more comfortable if the driving rain, which now poured down more soakingly than ever, had admitted of a window being opened, or if our number had been something less than thirty; but there was scarcely time to think as much, when a train of three horses was attached to the tow-rope, the boy upon the leader smacked his whip, the rudder creaked and groaned complainingly, and we had begun our journey.

As it continued to rain most perseveringly, we all remained below; the damp gentlemen round the stove gradually becoming mildewed by the action of the fire; and the dry gentlemen lying at full length upon the seats, or slumbering uneasily with their faces on the tables, or walking up and down the cabin, which it was barely possible for a man of the middle height to do without making bald places on his head by scraping it against the roof. At about six o'clock all the small tables were put together to form one long table, and everybody sat down to tea, coffee, bread, butter, salmon, shad, liver, steak, potatoes, pickles, ham, chops, black puddings, and sausages.

By the time the meal was over, the rain, which seemed to have worn itself out by coming down so fast, was nearly over, too; and it became feasible to go on deck; which was a great relief, notwithstanding its being a very small deck, and being rendered still smaller by the luggage, which was heaped together in the middle under a tarpaulin covering; leaving, on either side, a part so narrow, that it became a science to walk to and fro without tumbling overboard into the canal. It was somewhat embarrassing at first too, to have to duck nimbly every five minutes whenever the man at the helm cried, 'Bridge,' and sometimes, when the cry was 'Low Bridge,' to lie



The "Main Line" Canal just south of the junction of the Susquehanna Division at Amity Hall, with canal boat crossing the Susquehanna River on the downstream side of the old Clarks Ferry Bridge. Note mules on outside towpath along the bridge.
—Courtesy, William H. Shank.

down nearly flat. But custom familarizes one to anything, and there were so many bridges that it took a very short time to get used to this.

As night came on, and we drew in sight of the first range of hills, which are the outposts of the Allegheny Mountains, the scenery, which had been uninteresting hitherto, became more bold and striking. The wet ground reeked and smoked after the heavy fall of rain; and the croaking of the frogs (whose noise in these parts is almost incredible) sounded as though a million of fairy teams with bells were travelling through the air and keeping pace with us. The night was cloudy yet, but moonlight, too; and when we crossed the Susquehanna River—over which there is an extraordinary wooden bridge with two galleries, one above the other, so that, even there, two boat-teams meeting may pass without confusion—it was wild and grand.

I have mentioned my having been in some uncertainty and doubt, at first, relative to the sleeping arrangements on board this boat. I remained in the same vague state of mind until ten o'clock or thereabouts, when, going below, I found suspended, on either side of the cabin, three long tiers of hanging bookshelves, designed apparently for volumes of the small octavo size. Looking with greater attention at these contrivances (wondering to find such literary preparations in such a place) I descried on each shelf a sort of microscopic sheet and blanket; then I began dimly to comprehend that the passengers were the library, and that they were to be arranged edgewise on these shelves till morning.

I was assisted to this conclusion by seeing some of them gather round the master of the boat at one of the tables, drawing lots with all the anxieties and passions of gamesters depicted in their countenances; while others, with small pieces of cardboard in their hands, were groping among the shelves in search of numbers corresponding with those they had drawn. As soon as any gentleman found his number, he took possession of it by immediately undressing himself and crawling into bed. The rapidity with which an agitated gambler subsided into a snoring slumberer was one of the most singular effects I have ever witnessed. As to the ladies, they were already abed, behind the red curtain, which was carefully drawn and pinned up in the center; though as every cough, or sneeze, or whisper, behind this curtain, was perfectly audible before it, we had still a lively consciousness of their society.

The politeness of the persons in authority had secured to me a shelf in a nook near this red curtain, in some degree removed from the great body of sleepers; to which place I retired, with many acknowledgements to him for his attention. I found it, on after-measurement, just the width of an ordinary sheet of Bath post letter-paper; and I was at first in some uncertainty as to the best means of getting into it. But the shelf being a bottom one, I finally determined on lying upon the floor, rolling gently in, stopping immediately I touched the mattress, and remaining for the night with that side uppermost, whatever it might be. Luckily, I came upon my back at exactly the right moment. I was much alarmed, on looking upward, to see, by the shape of his half-yard of sacking (which his weight had bent into an exceedingly tight bag) that there was a very heavy gentleman above me, whom the slender cords seemed quite incapable of holding; and I could not help reflecting upon the grief of my wife and family in the event of his coming down in the night. But as I could not have got up again without a severe bodily struggle, which might have alarmed the ladies; and as

I had nowhere to go even if I had; I shut my eyes upon the danger, and remained there.

Between five and six o'clock in the morning we got up, and some of us went on deck, to give them an opportunity of taking the shelves down; while others, the morning being very cold, crowded round the rusty stove, cherishing the newly-kindled fire. . . . The washing accomodations were primitive. There was a tin ladle chained to the deck, with which every gentleman who thought it necessary to cleanse himself (many were superior to this weakness) fished the dirty water out of the canal, and poured it into a tin basin, secured in like manner. There was also a jack-towel. And, hanging up before a little looking-glass in the bar, in the immediate vicinity of the bread and cheese and biscuits, were a public comb and hair-brush.

At eight o'clock, the shelves being taken down and put away, and the tables joined together, everybody sat down to the tea, coffee, bread, butter, salmon, shad, liver, steak, potatoes, pickles, ham, chops, black puddings, and sausages all over again. Some were fond of compounding this variety, and having it all on their plates at once. As each gentleman got through his own personal amount of tea, coffee, bread, butter, salmon, shad, liver, steak, potatoes, pickles, ham, chops, black puddings, and sausages, he rose up and walked off. When everybody had done with everything, the fragments were cleared away, and one of the waiters, appearing in the character of a barber, shaved such of the company as desired to be shaved; while the remainder looked on, or yawned over their newspapers. Dinner was breakfast again, without the tea and coffee; and supper and breakfast were identical.

The canal extends to the foot of the mountains, and there, of course, it stops; the passengers being conveyed across it by land carriage, and taken on afterward by another canal boat, the counterpart of the first, which awaits them on the other side. There are two canal lines of passage boats; one is called the Express, and one (a cheaper one) the Pioneer. The Pioneer gets first to the mountain, and waits for the Express people to come up; both sets of passengers being conveyed across it at the same time. We were the Express company; but when we had crossed the mountain and had come to the second boat, the proprietors took it to their heads to draft all the pioneers into it likewise, so that we were five-and-forty at least, and the accession of passengers was not at all of that kind which improved the prospect of sleeping at night. Our people grumbled at this, as people do in such cases; but suffered the boat to be towed off with the whole freight aboard nevertheless; and away we went down the canal.

As we have not reached Pittsburg yet, however, in the order of our narrative, I may go on to remark that breakfast was perhaps the least desirable meal of the day, as, in addition to the many savory odors arising from the eatables already mentioned, there were whiffs of gin, whisky, brandy, and rum from the little bar hard by, and a decided seasoning of stale tobacco. Many of the gentlemen passengers were far from particular in respect of their linen, which was in some cases as yellow as the little rivulets that had trickled from the corners of their mouths in chewing, and dried there. Nor was the atmosphere quite free from zephyr whisperings of the thirty beds which had just been cleared away, and of which we were further and more pressingly reminded by the occasional appearance on the tablecloth of a kind of Game not mentioned in the Bill of Fare.

And yet, despite these oddities—and even they had, for me at least, a humor of their own—there was much in this mode of travelling which I heartily enjoyed at this time, and look back upon with great pleasure. Even the running up, bare-necked, at five o'clock in the morning, from the tainted cabin to the dirty deck; scooping up the icy water, plunging one's head into it, and drawing it out all fresh and glowing with the cold; was a good thing. The fast, brisk walk upon the towing-path between that time and breakfast, when every vein and artery seemed to tingle with health; the exquisite beauty of the opening day, when light came gleaming off from everything; the lazy motion of the boat, when one lay idly on the deck, looking through, rather than at, the deep blue sky; the gliding on at night, so noiselessly, past frowning hills, sullen with dark trees, and sometimes angry in one red burning spot high up, where unseen men lay crouching round a fire; the shining out of the bright stars, undisturbed by noise of wheels or steam, or any other sound than the liquid rippling of the water as the boat went on; all these were pure delights.

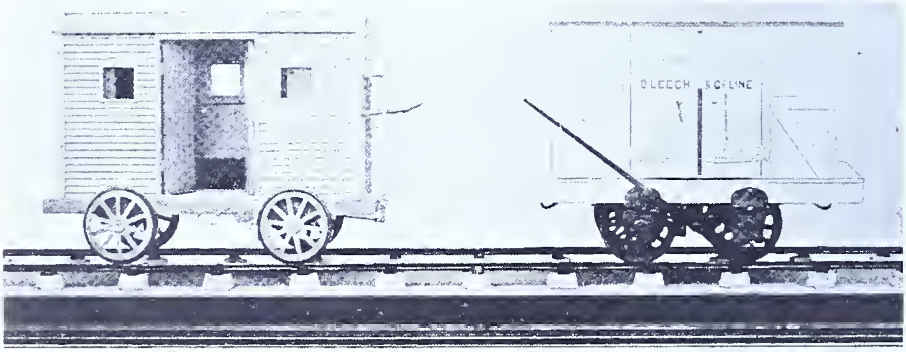
We had left Harrisburg on Friday. On Sunday morning we arrived at the foot of the mountain, which is crossed by railroad. There are ten inclined planes; five ascending, and five descending; the carriages are dragged up the former, and let slowly down the latter, by means of stationary engines; the comparatively level spaces

> between being traversed, sometimes by horse, and sometimes by engine power, as the case demands. Occasionally the rails are laid upon the extreme verge of a giddy precipice; and looking from the carriage window, the traveller gazes sheer down, without a stone or scrap of fence between, into the mountain depths below. The journey is very carefully made, however; only two carriages traveling together; and, while proper precautions are taken, is not to be dreaded for its dangers.
>
> It was very pretty traveling thus at a rapid pace along the heights of the mountain in a keen wind, to look down into a valley full of light and softness; catching glimpses, through the tree-tops, of scattered cabins; children running to the doors, dogs bursting out to bark, whom we could see without hearing; terrified pigs scampering homeward; families sitting out in their rude gardens; cows gazing upward with a stupid indifference; men in their shirt sleeves, looking on at their unfinished houses, planning out tomorrow's work; and we riding onward, high above them, like a whirlwind. It was amusing, too, when we had dined, and rattled down a steep pass, having no other moving power than the weight of the carriages themselves, to see the engine, released long after us, come buzzing down alone, like a great insect, its back of green and gold shining in the sun so that if it had spread a pair of wings and soared away, no one would have had occasion, as I fancied, for the least surprise. But it stopped short of us in a very business-like manner when we reached the canal; and, before we left the wharf, went panting up this hill again, with the passengers who had waited our arrival for the means of traversing the road by which we had come.
>
> On Monday evening furnace fires and clanking hammers on the banks of the canal warned us that we approached the termination of this part of our journey. After going through another dreamy place—a long aqueduct across the Allegheny River, which was stranger than the bridge at Harrisburg, being a vast, low, wooden chamber full of water—we emerged upon that ugly confusion of backs of buildings and crazy galleries and stairs which always abuts on water, whether it be river, sea, canal, or ditch; and were at Pittsburgh.

Despite many handicaps, including washouts in wet weather, occasional water shortages in prolonged dry periods, and the fact that it could not operate in winter (when it was usually drained to prevent damage from heavy freezes), the Pennsylvania Main

Line Canal was an important traffic artery for twenty years. With better business and political management, it might easily have lasted as long as the Erie Canal, and been as important in the history of America. But its poor financing and management caused it to amass a heavy debt, and state officials sold the Main Line Canal in 1857 to the Pennsylvania Railroad Company for $7,500,000. The same railroad purchased the state-owned line from Philadelphia to Columbia, the Beaver and Erie Canal, and a number of other branches. The Sunbury and Erie Railroad purchased the Delaware, North Branch, West Branch, and Susquehanna Divisions for a little less than $4,000,000. The Sunbury and Erie was leased to the Pennsylvania a few years later for a period of 999 years.

Although a few of the independent canals operated until about the time of World War I, most of the state-owned canal system with a total of 834 miles reached an end of its usefulness soon after the sale, having run a course of only about thirty years. However, it is easy to underestimate the importance of the public system and the more than 400 miles of privately owned canals. Their effect on development of the area was tremendous, and set the stage for the railroad era which was to follow.



OLD PORTAGE PASSENGER CAR OLD PORTAGE FREIGHT CAR.

Models of cars used on the Allegheny Portage Railroad.

IV. RAILROAD TRAINS AND TROLLEYS

WHEN someone mentions railroads, most of us tend to think of long trains pulled by locomotives—steam, diesel, or electric. But rails were first used as a kind of highway surface for wagons and carriages pulled by horses.

One of the earliest railroads in America was of this type. It was built at Leiperville, Delaware County, by Thomas Leiper in 1809, and extended from his quarry on Crum Creek to a boat landing on Ridley Creek. The wheels were made of cast iron, and ran on wooden rails. A similar wooden-track railroad was built in western Pennsylvania about 1818 to 1820 at the Bear Creek Furnace, near Parker in Armstrong County. As time went on, other similar roads were built, often with strap iron fastened on to the wooden rails to prevent wear.

The first line of real importance in Pennsylvania was the Mauch Chunk Railroad in Carbon County. Nine miles long, with four miles of side tracks, it was built in 1827 to connect the mines of the Lehigh Coal and Navigation Company with the Lehigh River. The cars of this railroad ran downhill by gravity with loads of anthracite coal, and were pulled back up empty by horses or oxen. Two years later, the Delaware and Hudson Canal Company completed the Carbondale and Honesdale Railroad to haul coal from its mines at Carbondale to a landing on the canal, 16¼ miles away. This railroad was the first in America to use a steam locomotive, in 1829. In that day, locomotives bore names in the same way the Pullmans do today. This one was named the Stourbridge Lion for the town in England where it was made. But it proved to be too heavy for the tracks and was used for only a short time.

The 1830's brought the real beginning of the use of steam locomotives and also a wide increase in the number of railroads in Pennsylvania. The Philadelphia, Germantown and Norristown Railroad was chartered in 1830, and five miles of it placed in operation in 1832. Charters during the next two years included the Philadelphia and Reading Railroad Company (today the oldest railroad in the state), chartered in 1833 and beginning operations in 1838; the Philadelphia and Trenton Railroad Company, and the Harrisburg, Portsmouth, Mt. Joy and Lancaster Railroad Company, begun in 1832 and placed in operation in 1838. It had originally been planned for the Philadelphia and Columbia Railroad and the Allegheny Portage line to use horses for power, and the first loads on the latter were actually hauled in this way.

In 1831, however, the Camden and Amboy Railroad bought an improved British engine, the John Bull, from George and Robert Stevens, which inspired Matthias W. Baldwin of Philadelphia to build his first locomotive, the Ironsides, in 1832. The canal commissioners used a locomotive named the Blackhawk, perhaps English-built, during the construction of the Philadelphia and Columbia Railroad.

The first train operated by the line started from its western end on April 15, 1834, drawn by the Blackhawk. Officials were very cautious about the trip, to say the least. On the first day, the train ran only to Lancaster, where everyone spent the night. On the following day it started at 8 a.m. and arrived at the edge of Philadelphia in eight hours and a half.

"So little confidence had the managers in the endurance of the locomotive that an empty horse car followed the train, with relays of horses at different points to rescue the party in case the loco-

Stagecoach on Main Line of the Public Works of Pennsylvania.

motive gave out," says A. K. McClure. "They had much difficulty with the locomotive, and at times the passengers had to get out and give a healthy push to aid it in starting."

On June 28, 1844, the Philadelphia and Columbia began using a Baldwin locomotive, the Lancaster, which hauled loads up to 75 tons. Within sixteen months, there were ten units of this type in service, and steam was being used to power the Portage Railroad. The Philadelphia and Reading Railroad was fully open for business on December 5, 1839, with a steam locomotive, the Gowan and Marx, making the trip from Reading with 80 small cars. The load included 1,635 barrels of flour, 73¼ tons of iron, six tons of coal, two hogsheads of whiskey, and some other freight, and sixty passengers.

For the first few years of rail travel, many railroads were operated on the same plan as turnpikes and canals, customers (including transportation companies) providing their own freight or passenger cars and paying toll to have them transported.

Things were not always easy or safe on the young railroads of the Keystone State. In the early period, when wooden rails were most commonly used with a strap iron surface, lengths of the iron facing would sometimes come loose, bend upwards, and be forced through the floor of the passenger or freight cars. Commonly referred to as snakeheads, these constituted a major hazard, often causing deaths and costly damage.

Another problem was the fact that railroad gauges had not been standardized. Rails on one road might be seven feet apart, on another only three or four. As a result, locomotives and cars often could not pass from one road to another. Everything had to be unloaded, a circumstance which came to be costly and time-consuming.

People who had picked up trade and employment in transferring and reloading freight and passengers were often bitter and resentful of efforts by railroads to change over to the standard gauge of 56½ inches. The town of Erie, situated in a short stretch in Pennsylvania between New York and Ohio, got a law passed in 1851, requiring that railroads from Pennsylvania into New York and those into Ohio be of different gauges, so as to maintain jobs in unloading and reloading freight between Buffalo and Cleveland.

The first railroad to challenge the Main Line Canal and the great turnpikes in the field of transportation across the mountains was the Baltimore and Ohio, which asked for a franchise to cross southwestern Pennsylvania to Pittsburgh in 1828 and received permission on condition the line be built within 15 years. This charter was forfeited because by 1842 the railroad had extended only to Cumberland, Maryland, where it had to stop for three years to get more money for building.

A hot fight developed in the legislature in 1846 between backers of the B & O and a new line called the Pennsylvania Central Railroad (now the Pennsylvania Railroad), which planned to build a road from Harrisburg to Pittsburgh, with branches leading to Uniontown, Erie, and several other points.

The new road was first conceived by Captain Samuel D. Karns, a canalboat master in summer, who made his home during the winter in Harrisburg and obtained money during sessions of the legislature by lobbying. His request for a charter had strong backing from Philadelphia, which sensed a threat to the commerce

"The Pioneer," Cumberland Valley Railroad, Chambersburg, Pennsylvania.

coming to the city by canal and hoped that it would not be diverted over the B & O Railroad to Baltimore instead. Pittsburgh interests, already jealous of Philadelphia, favored the renewal of the B & O franchise and threatened to secede and form a new state unless such action was taken.

In a compromise decision, the legislature granted a charter to the Pennsylvania Railroad and renewed the franchise of the Baltimore and Ohio, with one condition. The renewal was to be void if the Pennsylvania could get $3,000,000 in stock subscribed, a third of the money in hand in cash, and thirty miles of line under construction contract by July 30, 1847.

By almost superhuman efforts, the Pennsylvania achieved the conditions laid down. The Baltimore & Ohio then tried to get into Pittsburgh by buying a rural railroad, chartered but not much of it built, called the Pittsburgh and Connellsville, which had permission to extend its line to the Maryland border.

Rebuffed in this move by Pittsburgh interests, who had by this time transferred their allegiance to the Pennsylvania, the B & O began a mad race with that line, each building as fast as possible to reach the Ohio River.

For five years the race continued at top speed, the B & O building its lines across northern Virginia (now West Virginia) towards Wheeling; while the Pennsylvania with easier but still rugged mountains, largely followed the course of the Pennsylvania Canal, and arranged with the state to take for temporary use the Philadelphia and Columbia and Allegheny Portage Railroads, to provide through service until the Pennsylvania line was completed.

In order to cut off as much trade as possible from Pittsburgh, the Baltimore and Wheeling interests planned the Hampfield Railroad, to run from Greensburg on the route of its rival line, through Washington, to Wheeling. Also planned was a network of western tributaries leading from Wheeling to Cleveland, Alton, Indianapolis, Columbus, Cincinnati, and Nashville. This inspired Pittsburghers, already contributing heavily to the Pennsylvania and to western lines through Ohio, to begin planning and chartering others, the Allegheny Valley Railroad up that river into New York, the Pittsburgh and Cleveland, the Pittsburgh, Fort Wayne and Chicago, and a roundabout line down the west bank of the Ohio River to Cincinnati.

The race to the Ohio River almost ended in a tie. In December, 1852, the Pennsylvania Railroad opened its western division into Pittsburgh, providing continuous rail transportation from Philadelphia by way of the Philadelphia and Columbia, and Allegheny Portage Railroads. Just six weeks later the Baltimore and Ohio brought its first through train across the mountains into Wheeling.

Even after the construction of the Pennsylvania Railroad was under way, the state started building a new Portage line track which would do away with the inclined plane in crossing the Allegheny ridge. The Pennsylvania, by a magnificent feat of engineering, succeeded in crossing the ridge by gaining elevation at its Horseshoe Curve, west of Altoona, which was opened to through traffic in 1854 and has been world-famous ever since. The Allegheny Portage Railroad had almost gone out of business by the time its new line was ready to go into operation.

Many of the western connections from Pittsburgh and Wheeling were completed, but work on the Hempfield was stopped, leaving unused bridge piers in the Monongahela near Belle Vernon, and numerous cuts and fills that were never used for anything. Years later a line along its course was partly built by the Baltimore and Ohio, but from Washington, Pennsylvania, not Greensburg.

The successful conclusion of the race brought a swift increase in railroad building in Pennsylvania, including some lines which are still of principal importance today.

The Philadelphia and Reading (now the Reading) had been chartered in 1833 and was in operation from Reading to Philadelphia by December, 1839. It continued to expand its system, building many lines in eastern Pennsylvania and nearby areas.

A road chartered in 1846 as the Delaware, Lehigh, Schuylkill and Susquehanna became the Lehigh Valley in 1853. The Delaware, Lackawanna and Western, chartered in 1849 as the Liggetts Gap Railroad, took its more important name and began building in 1851.

One of the large Pennsylvania railroads originally chartered outside the state was the Erie, first planned by a New York group and chartered in 1833. Dipping into extreme northeastern Pennsylvania in two places, it ran west above the state line to Jamestown and reached Lake Erie at Dunkirk. Later it built westward from Jamestown, through Meadville and Sharon, to Chicago. As it grew it leased a number of lines into the hard coal region, and by a recent merger with the Lackawanna has become one of the state's largest railroads.

Unlike the Pennsylvania Railroad, which was mainly the work of one company, the New York Central Railroad was developed by building and piecing together various short lines between Albany and the midwest. Between Cleveland and Buffalo the pieces consisted of the Cleveland, Painesville, and Ashtabula Railroad, later renamed the Lake Shore; the Franklin Canal Company, which—despite its name—built a railroad from the Ohio line to Erie; the Erie and North-East, between Erie and the New York state line; and the Buffalo and State Line, which connected with the lines from Albany.

The variation in gauges among these railroads was a major hindrance to the efforts of the New York Central system to develop a through line into the Middle West. The Erie and North-East Railroad had been completed in 1852 with a six-foot gauge, in the expectation that the broad-gauge Erie Railroad would extend its route that way; but it also agreed to lay a second track of the standard four-foot-eight-and-a-half-inch gauge to match the New York Central. The railroads west of Erie, however, used the gauge of four feet ten inches established by Ohio law in 1848. When Cleveland interests induced the Buffalo and State Line to adopt the Ohio gauge and brought pressure on the Erie and North-East to do the same, the Pennsylvania legislature passed an act in 1852 requiring that the existing gauges be maintained.

When this act was repealed in 1853, the Erie and North-East began to change its tracks to the Ohio gauge to permit through traffic from Buffalo to Cleveland and points west. The change brought rioting and bridge burning at Erie, whose citizens saw their profitable transfer business shifted to Buffalo. But the state eventually worked out a settlement involving the promise of stock subscriptions in the Sunbury and Erie and the Pittsburgh and Erie railroads and the building of a spur line to Erie harbor. This ended the so-called "Peanut War." Later the New York Central built or bought several other lines in Pennsylvania.

On the other hand, the Sunbury and Erie Railroad, which the city of Erie had given solid backing, ran short of money before the line was completed, in spite of generous aid from the state and from the city of Philadelphia. Renamed the Philadelphia and Erie, it was leased in 1862 to the Pennsylvania Railroad for 999 years and completed in 1864. By 1860 Pennsylvania had more than 2,000 miles of railroad.

Canal and turnpike interests, and especially the teamsters and the stagecoach lines, had waged a hard fight against the building of any railroads at all, fearing that they would mean an end of their business.

They soon learned how real their concern had been. By 1860 the Main Line Canal and many of its branches had been sold and were out of business, the highways were unused and overgrown with weeds and brush, and the steamboat industry on the Monongahela and the Ohio was virtually ruined.

The greatest of the railroad labor wars in Pennsylvania occurred in 1877, when the operators made a deep cut in wages and immediately announced that trains would be run with twice as many cars as before but with single crews. Opposition reached fever heat in July at Pittsburgh, when mobs took over the whole city, looting and burning railroad properties, including the terminal station, the roundhouse, and numerous trains. During the rioting a militia company fired at the mob, killing over twenty persons, mostly innocent bystanders—many of them children who were watching from a nearby hillside. Local police and militia were unable to control the situation, and the riots lasted for a whole weekend, until Federal troops were sent to Pittsburgh to put down the disturbance.

Even after railroads were using their own cars as well as engines, and charging regular freight rates, they made no attempt to arrange with connecting lines to supply through service. This was done by independent transportation companies which bought car service from the railroads and siphoned off most of the profits. It was only after William Thaw, of Pittsburgh (who had grown rich in this way), bought a large part of the stock of the Pennsylvania Railroad and became an official in 1870, that many railroads began to take over the management of their freight.

The Pennsylvania Railroad gradually developed a tremendous political power, so great that any person or group challenging it would find serious difficulty in securing a charter on conditions which would make the building of a new road possible. It had the freight traffic of Pittsburgh in a vise-like grip which threatened to strangle industry, while car loadings were greater there than in any other inland city in America. At one time Pittsburghers could ship their products by boat or rail to Cincinnati and from there by train to New York much cheaper than they could send the same goods directly to New York by the Pennsylvania Railroad.

Eventually the Baltimore and Ohio succeeded in purchasing the Pittsburgh and Connellsville and extending it to Pittsburgh in 1871. From the B & O main line at Cumberland, Maryland, trains reached Connellsville over the Western Maryland Railroad. Eight years later Pittsburgh got an outlet towards the northwest by the Pittsburgh and Lake Erie Railroad, built by local people and eventually sold to the New York Central, with which it connected at Youngstown, Ohio.

For a little while it looked as though Pittsburgh would be delivered from the stranglehold by new routes which resulted from a railroad war between the Vanderbilt-controlled New York Central Railroad, and the Pennsylvania and West Shore Roads which were under the domination of J. P. Morgan's fortune. The West Shore, just across the Hudson River from the New York Central, was fighting it for the New York traffic to Buffalo and Chicago. The fight reached the point where a railroad ticket from New York to Chicago sold for as low as eight dollars, and freight charges were similarly cut.

In 1883 William H. Vanderbilt, Andrew Carnegie, and others announced their intention to revive plans for the South Penn Railroad, often surveyed but never built, from Harrisburg to a point near Pittsburgh. At both ends it would connect with lines controlled by Vanderbilt, giving him a line for through traffic from New York and Philadelphia to Chicago by way of Pittsburgh, as well as by Buffalo. This would enable the Vanderbilt lines to compete for Pittsburgh freight, and seemed certain to bring down the unduly high rates being charged then by the Pennsylvania.

Work was begun in a flash, including nine tremendous tunnels through the Allegheny Mountain ranges, three of them more than a mile each in length.

By this time things had gone so much to the bad that not only were both railroads threatened with bankruptcy, but the entire financial structure of America was in peril. Morgan called a peace conference on his yacht, which ended with the West Shore being turned over to the New York Central, and the half-completed South Penn to the Pennsylvania Railroad. When the Commonwealth filed suit under a law forbidding a railroad to buy a competing line, the Pennsylvania Railroad stopped work on the South Penn, allowing its right-of-way to fall into disrepair for more than half a century. It never was built as a railroad, but was later revived in a most important development in Pennsylvania transportation. (See next chapter.) Eventually Carnegie built the Bessemer and Lake Erie to get an outlet to the lakes for his steel and a way into Pittsburgh for his Lake Superior iron ore.

About 1885 the Baltimore & Ohio finally got an outlet towards Chicago by financing Henry W. Oliver, who built the Pittsburgh and Western through Butler County and New Castle, and then turned it over to the parent road. This has long since become the main line of the Baltimore & Ohio.

By about that time the abuses of railroad competition and pricing had reached such an extent that the Interstate Commerce Commission was set up to regulate the railroads and prevent such cutthroat tactics and to assure that every area and every type of freight would be treated without discrimination.

In the 1890's George J. Gould, the son of the financier, Jay Gould, decided to carry out his father's ambition to operate a through railway system running from coast to coast. Included in the plans for his Wabash Railroad were a low-grade freight route through northern West Virginia, and—for prestige and the Pittsburgh freight trade—a passenger and freight line from central Ohio through Pittsburgh to connect with the Western Maryland Railroad at Connellsville. He built a tremendous freight and passenger terminal at Pittsburgh, and trains began running in 1905. The venture had proved so costly, however, that it was quickly in bankruptcy. Almost the only vestige remaining today is its Pittsburgh connection, now the Pittsburgh and West Virginia. The magnificent station stood almost idle for thirty years, principally used during World War II as a Red Cross headquarters, and was finally torn down after a disastrous fire that destroyed the freight terminal and its warehouse soon after the end of the war.

Railroads grew rapidly in Pennsylvania, and by 1904—when the impact of the automobile first began to be felt—they had more than 11,000 miles of track, with freight and passenger trains serving almost every town and village in the Commonwealth. Since 1960 this has fallen under 9,000 miles.

Recent years have seen steam locomotives give way to diesels, and passenger service almost completely discontinued by railroads in Pennsylvania, except for a few trains for long distance traffic and commuter runs. Even these bid fair to become almost a thing of the past within not many years. However, the railroads haul tremendous tonnages of freight, mail, and express, which it would have staggered our forefathers even to dream about.

TROLLEYS AND INTERURBANS

Almost as soon as the push for railroads got well under way, cities and towns all over America began building street railways, which—because steam trains were tending to become a nuisance in cities—usually were horsecar lines. Pittsburgh's first such line went into operation in 1859, the first in Philadelphia soon afterward. The number multiplied rapidly, but their range was limited even if good horses were used, until the introduction of the cable car system in the early 1880's. By this plan, stationary steam engines operated an endless cable supported at intervals by a series of revolving drums, so that by catching on to it with a gripping device a car could be pulled along at a rapid rate.

The plan was excellent for climbing hills, but short turns were hard to make, the motorman often having to release the cable as he approached a curve, and coast around before grabbing on to it again. Later when electric transit systems began to be developed, there was a quick changeover. Cable cars lasted less than a decade, except in a few places where extremely steep grades made the use of cables necessary.

A great deal of money was invested in electric railway construction, and in the decade leading up to 1900 many great mergers resulted in the formation of unified systems in nearly all principal towns and cities.

Almost from the very first the men operating some of the traction companies were able to see the possibilities in extending the use of electric cars outside the cities and from town to town. Perhaps the first to take such action in Pennsylvania was the Conestoga Traction Company, originally planned as a street railway in Lancaster, but eventually operating more than 140 miles of rural extensions. Organized in 1890, it extended service to Millersville in 1891, Marietta in 1894, Lititz in the following year, Ephrata in 1900, and by 1909 as far as Elizabethtown and Coatesville.

After 1900, the number of these interurban electric railways increased greatly. By 1910 it was possible to go by electric car from Philadelphia to Wilmington, Carlisle, Strasburg, or New York. To the west, the situation was even more favorable for those wishing to make electric car trips. From Fairchance or Martin—each approximately sixty miles south of Pittsburgh and near the West Virginia border—it was possible to go by electric interurban railway to Oneonta, New York, Elkhart Lake, Wisconsin, or below Louisville, Kentucky—each well over 500 miles away by the route travelled. The Pittsburgh passenger could go to Detroit or Chicago by trolley, but not to New York City, because of a short gap between Hudson and Tarrytown, New York, that was never closed.

By 1918 every county in Pennsylvania had some interurban electric service except Bedford, Cameron, Clarion, Elk, Forest, Fulton, Greene, Juniata, Perry, Pike, Potter, Sullivan, Tioga, and Wayne, all mountain counties. More than three-fourths of the counties of Pennsylvania had such service, although this could not be said for even three-fifths of the communities. Actually there was very little trolley service in the great area of northern Pennsylvania between the Allegheny River and the North Branch of the Susquehanna.

Such travel averaged no more than two cents a mile in cost, often being much cheaper. But just as its convenience and flexibility permitted it to grow rapidly against the competition of steam railroad traffic, the even greater convenience of the auto quickly cut into its own profits and stability. Trucks soon began carrying much of the freight which had been vital to many of these lines, whereas the auto and much later the bus drained off the short run and more and more of the long-distance traffic of interurban trolley lines.

A slow decline in the trolleys and interurbans began with the great increase in auto traffic following World War I. The depression of 1929 was the final blow and the years since then have almost completely ended the saga of the electric cars, except in and close to a few principal cities.

There was something about this interurban traffic that tended to catch the imagination of the rider and the public. Ordinarily when a transport system is discontinued, it dies without mourners. But when the final run of the last car on West Penn Railways left Connellsville for Uniontown at 11:30 p.m. on August 9, 1952, a crowd of 5,000 people gathered for a civic ceremony in its honor. And a trolley museum, complete with a mile-long circle of operating track, has been built at Washington, Pennsylvania, by the Pittsburgh Electric Railway Club.

Interurban car, about 1930.
—Courtesy, Pennsylvania Railway Museum Association.

V. HIGHWAYS AND HIGH FLIGHT

ALTHOUGH Pennsylvania's highways appeared to have died before 1870, following the rise of railroads, they were in fact only asleep. Almost every mile of the neglected road system carried local traffic from farm to farm and from farm to town, even though it was so rutted and weed grown as to be scarcely recognizable. Old turnpikes and plank roads had long ceased to be maintained, and most had gone into bankruptcy or merely quit business, making little or no attempt to collect tolls.

When journalist William H. Rideing started out to rediscover the National Pike for a magazine story in 1878, he found a wagon trail still there, but almost completely deserted. He wrote:

> The winding undulations revealed no travellers; some of the old taverns with windows out gaped vacantly, while a few others were occupied; a part of the toll houses were abandoned, and those which do double duty find so little business that the keeper combines his occupation with that of the cobbler or blacksmith.

In the mountains of Pennsylvania the road was in many places almost impassable. "Its toll houses were out of repair, its bridges needed new masonry and its roadbed was without gravel," says Jordan. "Between towns it was unused and forgotten except for trifling local traffic."

Yet there was still concern in some quarters for good roads, and in 1891 the University of Pennsylvania and a committee of Philadelphia citizens sponsored a prize contest for essays on better roads. By 1895 people were becoming excited over a new gadget called the horseless carriage, or sometimes called the automobile, and in 1895 Pennsylvania passed a law that any county desiring to improve its roads could take them over and get state aid.

In 1905 Pennsylvania set up a Department of Highways to handle such state-aided improvement work, and also began to license autos. The Department's first report mentions only three types of roads: earth, gravel, and macadam. The report shows that during 1905 the State Highway Department helped to improve more than 77 miles of highways varying from 14 to 22 feet wide and averaging about 16 feet. The total cost to the state averaged about $8,500 a mile. It also spent $50,000 to help maintain more than 660 miles of roads. And the report showed that there were still over 1,100 miles of toll roads in Pennsylvania. Jordan writes:

> With each improved section came more traffic. The early tourist, wrapped in linen duster and wearing driving goggles, took a lot of punishment. First he carried his spare gasoline in tin cans. Soon a few blacksmiths and drugstores handled fuel. If a motorist ran out of gas at night, he had to wait until morning for merchants to open their stores. His machine came equipped with a whipsocket, but no whip. That was a concession to horse-and-buggy days. A driver lighted his headlights with a match, patched his own tires, and, when stuck in the mud, hired a farmer to pull him out. In Pennsylvania irate ruralites organized the Farmers' Anti-Automobile Association and published rules for drivers:
>
> 1. Automobiles travelling on country roads at night must send up a rocket every mile, then wait ten minutes for the road to clear. The driver may then proceed with caution, blowing his horn and shooting off Roman candles, as before.
> 2. If the driver of an automobile sees a team of horses approaching, he is to stop, pulling over to one side of the road, and cover his machine with a blanket or dust cover which is painted or colored to blend into the scenery, and thus render the machine less noticeable.
> 3. In case a horse is unwilling to pass an automobile on the road, the driver of the car must take the machine apart as rapidly as possible, and conceal the parts in the bushes.

As the auto developed, and motorists widened their horizons beyond merely driving up and down the streets near their homes, more and more interest was shown by Pennsylvanians in road improvement. Many people still felt that such work should be a local matter, handled by each individual city, village, or township; but others with better ideas were organizing a Lincoln Highway Association in 1913 to improve the old Pennsylvania Road and extend it far to the westward. In 1916 the Federal Government began to aid the states in building highways which were

The Lincoln Highway in 1917, approaching McConnellsburg from the west.
—Courtesy, "Pittsburgh Press."

of importance to long-distance traffic, and in November, 1921, a Federal aid program was adopted which was destined to have wide results in building up trunk highways all over the United States.

Since even in horse and buggy days there had to be some kind of roads leading to almost every hamlet and farm, Pennsylvania's road story in the past seventy years has been largely one of improvement in width, straightness, and surface condition, rather than any very great increase in total road mileage. In 1914 for instance, Pennsylvania had a total of 97,850 miles of roads, but most of these were almost completely unimproved, and many were little more than cowpaths along which brush was cut and mudholes were filled often enough to make them passable for jolt-wagons and buggies most of the year.

By 1950 the total—including county, city, rural, and township roads—was still a little short of 100,000 miles, although a survey noted that this was equal to the total in Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Delaware, and Maryland, with enough left over to make a road from Philadelphia to Great Falls, Montana, Calgary, Alberta, and beyond Anchorage, Alaska.

In 1924, 17 per cent of Pennsylvania's highways were paved with concrete and 33 per cent with bituminous ("blacktop") and similar materials, including cinders, and almost half were completely unimproved. Improvement programs at this time were largely concerned with attempts to build principal highways.

The big break in Pennsylvania road building came in 1931 after Gifford Pinchot had been elected to his second term as governor, on a platform which included a promise to "get the farmer out of the mud." At this time some 73,000 miles of Pennsylvania's roads were the responsibility of the state's 1,500 second class and lower class townships, and these had been able to do comparatively little towards highway improvement.

Carrying out his campaign promise, Pinchot asked the legislature to take over some 20,000 miles of these roads, and this was done without a dissenting vote. Quickly Pennsylvania embarked on a program of crisscrossing the state with a network of paved rural roads. Although of light construction, consisting of broken stone covered by cheap blacktop material at a cost of some $7,000 per mile, and varying in width from 10 to 16 feet, they were a tremendous boon not only to farmers, but also to small villages and towns lying off the railroads. For more than a quarter of a century, highways of such construction were commonly referred to in Pennsylvania as "Pinchot Roads."

As the use of autos increased, so did that of buses, until the bus has almost completely replaced train and trolley service throughout the state except for large cities and a few trunk rail lines.

By 1934 nearly 19% of Pennsylvania's highway mileage was paved with concrete, more than 51% with blacktop and other similar materials, and under 30% still remained unimproved. After another decade the percentage of Pennsylvania roads paved with concrete had dropped again to 17%, but more than two-thirds of its road mileage was of bituminous or other improved construction and under 15% unimproved. Figures in 1949 showed 11% concrete, 74.2% blacktop or similar material, and less than 10% of the state's entire mileage still unimproved. By 1950, Pennsylvania had over 15,000 miles of highways built and maintained

An early Greyhound bus.

by the state, and its rural systems had decreased to only 26,000 miles.

As roads increased and improved, so did their use increase. By 1935 about 7% of all motor vehicles in America were registered and operated in Pennsylvania, including 1,852,249 automobiles, buses, commercial trucks and tractors. By 1940 this figure had increased to above 2,200,000 and by 1961 hit a fantastic total of 4,370,084 autos, buses, and trucks.

Even more impressive than the improvement in surface has been the increase in width of most Pennsylvania highways. As late as 1933, for instance, highways in Allegheny County averaged less than sixteen feet in width. Today it is hard to find so narrow a road anywhere in the entire state, except for mountain areas and strictly farm and local roads.

From the very first, one of the important features of the rise of the gasoline-powered auto was the use of trucks for hauling, although because of the poor condition of most highways such use was largely limited to deliveries in cities. As highways have been improved, trucks have grown more numerous and larger, until today a high percentage of Pennsylvania's freight transportation is by tremendous trucks, carrying loads up to 71,145 pounds of all kinds of materials, and running on as many as eighteen or sometimes even more tires per truck, often at speeds of more than a mile a minute. Such trucks, operating coast to coast and covering thousands of miles in a week, have brought cheap, heavy transportation not only to every town and village, but to almost every house and farm of the state.

The Pennsylvania Turnpike and Its Fellows

When work on the old South Penn Railroad was discontinued in 1885, there remained along its course a considerable mileage of graded roadbed, nine unfinished tunnels, and the piers of a never-built bridge across the Susquehanna River at Harrisburg. These stood useless and neglected for more than half a century. They might still have been neglected today but for a jesting remark made one evening near the end of January, 1935.

Several men in Harrisburg had gone out for a late snack before going to bed that evening, including Clifford Patterson, a legislator from Washington County; Victor Lecoq, an employe of the State Planning Commission, and General Manager William A. Sutherland, of the Pennsylvania Motor Truck Association.

Sutherland had been looking at the old South Penn bridge piers from his office window, and suddenly turned to Patterson and said: "Cliff, the railroads have been giving us truckers a hard time. Why don't you build us a toll highway over the old South Penn roadbed?"

Patterson had little interest in trucks. He knew little if anything about the South Penn story. A funeral director from Monongahela, he was new in politics; but he did know of the mountains that cut Pennsylvania in two and made highway traffic a painful operation. Even though he knew the remark was a jest, Patterson was interested and started asking questions. Sutherland and Lecoq had many of the answers. The more they talked about the idea, the better it sounded, and they discussed it far into the night.

When they separated, all three were sure that in the cold light of dawn the whole idea would look like a pipe dream. Instead, it looked so good that Patterson went to see Warren Van Dyke, the new secretary of highways, about the plan. Van Dyke said it sounded all right, but he had no money to build such a road.

The three men were so much interested, however, that they kept digging for information and found enough to lay out a plan for their "dream highway" on a road map. Finally Sutherland contributed enough money to print some little maps with a short history of the South Penn Railroad on the back and the course of the proposed highway on the front.

On April 23, Patterson introduced a resolution asking the State House and Senate to name a commission to look into the project. Because he knew it would not pass if it required any appropriation, he did not ask for money, and because it cost nothing, it was passed in the flurry of activity before the legislature adjourned.

This was during the period when all kinds of public works were being undertaken to provide employment for a recovery from the 1929 depression, and someone had the idea of asking the Federal Works Progress Administration to provide $35,000 for a survey.

Nobody thought that the road would ever be built, but $35,000 for the survey would help working conditions in the state a trifle, and politicians arranged a little ceremony near Carlisle for the beginning of the work. Few people appeared on the scene, but one who did come was a widow from beyond Blue Mountain, who arrived in a battered automobile with her eight children. Since no program had been arranged, she felt free to step up and make a little speech:

"Gentlemen," she said, "this is the greatest day in history for our mountain district. That is why I got my children out of school to come here today. I wanted them to be present at this historic occasion."

Nobody thought to get her name, and it is unknown to this day. But what she said impressed the members of the commission, and they concluded that perhaps there was something to the idea after all. When the survey indicated that some 160 miles of superhighway from Carlisle to Irwin, near Pittsburgh, could be built for about seventy million dollars—it would cost well over 500 million today—they resolved to recommend building such a road. Patterson introduced a bill in the 1937 state legislature setting up a Pennsylvania Turnpike Commission, which had no money—only the right to issue bonds and try to sell them to build a superhighway. Largely because it cost nothing, the bill was passed on March 9 and signed into law on May 21, 1937.

Governor George H. Earle named as chairman of the Pennsylvania Turnpike Commission Walter A. Jones, a retired Pittsburgh oil man, largely to repay a political debt for his support. Newspapers made fun of the idea and agreed that the dream highway would never get beyond the dream stage.

Perhaps they were right, except that Jones turned out to be a whirlwind of energy. He started a two-pronged attack, trying to sell the bonds necessary to build the road and gathering all the pertinent information he could. He found that investors would not touch the bonds. The history of toll roads hardly made the project appear hopeful. But he kept on with his efforts during a search to find out who, if anyone, owned the old South Penn right-of-way. The route, he discovered, was the property of two other old railroads which had never been built, one of which in turn was owned by the Pennsylvania and the other by the Baltimore & Ohio. They asked $9,000,000 for the property, but Jones haggled the price down to $2,000,000.

Still no money was available, and at last Jones appealed to President Franklin D. Roosevelt for aid. The President changed the whole picture by writing an eight-word memorandum to Harold L. Ickes: "Give Walter Jones $20,000,000 for the Pennsylvania Turnpike." The amount was finally increased to $26,000,000.

Investors were still unwilling to buy the bonds, and so Jones went back to Washington once more, persuading the Reconstruction Finance Corporation to advance the rest of the money he needed. He was barely in time, for his Public Works Administration deadline on beginning work under the first grant had almost run out. The RFC made its commitment on October 8, 1938, and Jones got the word two days later. The deadline was November 1.

In this critical moment Jones showed lightning speed for which the Pennsylvania Turnpike has been famous ever since. On October 14 he advertised for bids, opened them October 26, and actually got one contractor at work the following day. There were lawsuits, jurisdictional strikes between labor unions, and earth

Cutting toward the eastern end of the Ray's Hill Tunnel of the Pennsylvania Turnpike, 1939.
—Courtesy, Pennsylvania Turnpike Commission.

and rock slides from the great cuts which had to be made to keep the 200-foot-wide right-of-way to its plan of not more than 3% grade at any point. But Jones kept work going and as the chances grew brighter for the completion of the road, the public began to buy the turnpike bonds.

The deadline to finish pavement was June 29, 1940, because the Public Works Administration was being discontinued. Jones had more than 15,000 men at work at one time and 155 contractors on the job, which included 299 bridges and seven tunnels, six of them made over from those of the old South Penn. The highway ran a little more than 160 miles, with not a single grade crossing or crossroad, from just east of Pittsburgh almost to Harrisburg.

It looked for a bit as if the whole matter would end in failure when heavy spring rains blocked almost all work on the highway during April, 1940. When May came, it brought one of the strangest races in all the history of road construction—29 paving contractors with 10,000 men and $4,000,000 worth of equipment, fighting the clock day and night. Although only four miles of pavement had been laid before May 1, work was completed before the deadline. Nearly every contractor broke former records, and one set a new one by laying heavy concrete roadway, 24 feet wide, at the speed of 125 feet an hour.

From the moment it was completed, the road was a success. Truck firms suddenly discovered that they could nearly double their pay loads over the mountains by using the gentle grades of the Turnpike. Tourists flocked to see and use the road and enjoy the novelty of riding through its tunnels. Tolls poured in and bonds began to be retired well ahead of schedule.

The Turnpike has more than fulfilled the mountain woman's prediction. For example, the former tiny village of Breezewood now has twenty modern motels. In 1940 it had fewer than twenty houses.

Even before he resigned in 1943 on account of ill health, Jones had started a movement to extend the Pennsylvania Turnpike eastward to Philadelphia and northwest to the Ohio line. Although delayed by World War II, work on the eastern extension was finished in 1950 and that on the western end was well under way. Then a branch was built to Scranton. A link to Erie was also planned, but this was made unnecessary by the completion of the dream of another Pennsylvanian.

Soon after being elected to Congress in 1932, J. Buell Snyder of Perryopolis came up with a plan to provide employment by building a network of high-speed roads across the country east and west, north and south, so that no place would be far out of reach of one of these highways. Although this plan, also advocated by other men, was not received well during his lifetime, it grew at last into the great interstate highway system now under construction. These dream highways will one day put an end to all American toll roads such as the Pennsylvania Turnpike and the numerous other state turnpikes which have been patterned after it. But before that time the Turnpike will have paid off its bonds and become the property of the state.

Pennsylvania Takes to the Air

Pennsylvanians shared in American dreams of flight before the birth of the airplane industry, but it is easy to overestimate the Keystone State's part in the development of the new transportation.

Samuel P. Langley made some of the earliest wind-tunnel experiments while director of the Allegheny Observatory at Pittsburgh between 1867 and 1887. Because he successfully flew model airplanes in 1896, and in 1903 (before the first flight of the Wright Brothers) built a machine which failed but was later successfully flown in 1914, enthusiasts have tried to claim that the first successful airplane was really a Pittsburgh invention. But they neglected to take into account that Langley, a native of Massachusetts, had been director of the Smithsonian Institution in Washington for nine years before his first model flew, and for sixteen years before he developed his machine, and that even then it would not fly until extensive changes had been made, embodying the results of eleven years of successful airplane flights.

Pennsylvania had a very real part in the development of the airplane industry, however, notably the first successful transcontinental flight, when Calbraith Perry Rodgers of Pittsburgh flew from Long Island, New York, to Long Beach, California, in 1911. He and many other Pennsylvanians built or purchased airplanes within a few years after the success of the Wright Brothers and had their part in the development of both amateur and commercial flight.

One pioneer in the field was Clifford Ball, of Pittsburgh, who although not an airman, secured a contract in 1927 to carry air mail between Pittsburgh and Cleveland, using standard planes and hiring pilots. He also pioneered in commercial passenger service, carrying one passenger at a time, when there was sufficient room, at a charge of $20 one way. Often the passenger's only place to sit was on the mail bags. In 1929 Ball extended his scheduled flights to Washington, D. C., and began using tri-motored, 15-passenger planes. The following year the name of his company was changed from Clifford Ball, Inc., to Pennsylvania Airlines.

In 1929 a group of Greensburg men had organized the Main Flying Service and offered scheduled flights from Greensburg

High Shop Plant No. 1 of the Naval Aircraft Factory, Philadelphia Navy Yard, 1918.

to Pittsburgh and Cincinnati. They named their airline Central Airways, and in 1946 it merged with Ball's enterprise as Pennsylvania Central Airlines. Later, the name was changed to Capital Airlines, with service over a large portion of the eastern United States. It eventually merged with United Airlines, one of the nation's largest carriers.

Another group organized the Pittsburgh Aviation Industries, which in 1936 merged with two other firms, Trans-Continental Air Transport and Western Air Express, to form what later became Trans-World Airlines.

The Piper Aircraft Corporation at Lock Haven has for the past quarter century been one of the greatest leaders in the production of small planes for amateur flying and somewhat larger ones for use in industry.

A Philadelphian, Harold F. Pitcairn, who had been experimenting with helicopters since about 1920 saw the first autogyro in England in 1928, and bought American rights to build and license such craft. He opened a factory in Willow Grove, and licensed several others.

For the next eight years it appeared that the autogyro was to be the leading type of slow-speed aviation, and many were made. But gradually the demand fell off, and with Sikorski's success in perfecting the helicopter in 1941 the earlier type plane became outmoded.

In the late 1930's an Irwin physician, Lytle S. Adams, conceived the idea of speeding up air mail from the smaller towns by using planes to pick up and drop mailbags, much in the fashion of the grab long used on express trains at stations where they made no stops. In 1939 he got an experimental contract to provide such service for 52 towns in Pennsylvania, Ohio, and West Virginia. At the end of the year the planes had missed only 8 per cent of the thousands of scheduled pickups and had operated without a single serious mishap or any loss of mail. For the next nine years, the operation, renamed All American Aviation, increased its circuit to include more than two hundred towns. In 1948 the operation was switched over to become one of the early feeder systems, and today as Allegheny Airlines, provides service particularly between Pittsburgh and Philadelphia, but also to a large number of towns throughout the East, Upper South, and Midwest.

Today the state of Pennsylvania is probably as well served by aviation as any similar area in America—perhaps in the world. Pittsburgh and Philadelphia have great airports, capable of accommodating the largest planes, and many smaller passenger airports are to be found in the state, as at Connellsville, Johnstown, Erie, Lancaster, Harrisburg-York, Allentown-Easton, Altoona, Reading, Lock Haven, Williamsport, Wilkes-Barre, and Scranton. In all, the state has 437 licensed airports, including the two international jet terminals and 16 standard terminals used by 13 commercial airlines and many charter and rental plane services.

In less than 200 years Pennsylvania has come from the day when it took three weeks to cross the state on horseback, to the point where a person almost anywhere in Pennsylvania can drive to an airport and be at almost any other place in the entire world within less than three days.

A SELECTED BIBLIOGRAPHY

CHAPTER I

Baldwin, Leland D. *Pittsburgh, The Story of a City,* Pittsburgh, 1937.

Faris, John T. *Old Trails and Roads in Penn's Land.* Philadelphia, 1927.

Harpster, John W. (Ed.). *Pen Pictures of Early Western Pennsylvania.* Pittsburgh, 1938.

Hulbert, Archer B. *Pioneer Roads and Experiences of Early Travelers.* Cleveland, 1904.

———. *The Old Glade Road.* Cleveland, 1903.

———. *Washington's Road.* Cleveland, 1903.

Jordan, Philip D. *The National Road.* Indianapolis, 1948.

Pennsylvania—A Guide to the Keystone State. New York, 1940.

Searight, Thomas B. *The Old Pike.* Uniontown, 1894.

Stewart, George R. *U. S. 40.* New York, 1953.

Swank, James M. *Progressive Pennsylvania.* Philadelphia, 1908.

Wallace, Paul A. W. "Historic Indian Paths of Pennsylvania," *Pennsylvania Magazine of History and Biography;* Vol. 72 (1952), pages 411-439.

———. *Indians in Pennsylvania.* Harrisburg, 1961.

CHAPTER II

Baldwin, Leland D. *The Keelboat Age on Western Waters.* Pittsburgh, 1941.

Dayton, Fred E. *Steamboat Days.* New York, 1925.

Morrison, John H. *History of American Steam Navigation.* 1903. (Reprint, New York, 1958.)

Pennsylvania—A Guide to the Keystone State. New York, 1940.

Swetnam, George F. *Pittsylvania Country.* New York, 1951.

Way, Frederick, Jr. *The Allegheny.* New York, 1942.

———. *Way's Dictionary of Western River Packets.* Sewickley, Pa., 1950.

———. *Way's Directory of Steam Towboats.* Sewickley, Pa., 1953.

CHAPTER III

Bishop, A. L. *State Works of Pennsylvania.* New Haven, 1909.

Cummings, Hubertis M. *Pennsylvania Board of Canal Commissioners' Records.* Harrisburg, 1959.

Dickens, Charles. *American Notes.* New York, 1842.

Harlow, Alvin F. *Old Towpaths.* New York, 1926.

Hulbert, Archer B. *Great American Canals.* Cleveland, 1902.

McCullough, Robert, and Leuba, Walter. *The Pennsylvania Main Line Canal.* Martinsburg, Pa., 1961.

Shank, William H. *The Amazing Pennsylvania Canals.* (Reprint.) York, Pa., undated, 1960?

Stephenson, Clarence D. *The Pennsylvania Canal in Indiana and Westmoreland Counties.* Marion Center, Pa., 1961.

Swank, James M. *Op. cit.*

CHAPTER IV

Ambler, C. H. *History of Transportation in the Ohio Valley.* Glendale, Cal., 1932.

Burgess, George H., and Kennedy, Miles C. *Centennial History of the Pennsylvania Railroad Co.* Philadelphia, 1949.

Casey, R. J., and Douglas, W. A. S. *The Lackawanna Story.* New York, 1951.

Harlow, Alvin F. *The Road of the Century.* New York, 1947.

Hilton, George W., and Due, John T. *The Electric Interurban Railways in America.* Palo Alto, 1960.

Hungerford, Edward. *Men of Erie.* New York, 1946.

———. *Story of the Baltimore and Ohio Railroad.* New York, 1928.

McClure, A. K. *Old Time Notes of Pennsylvania.* Philadelphia, 1905.

McCready, Albert L., and Sagle, L. W. *Railroads in the Days of Steam.* New York, 1960.

Pennsylvania—A Guide to the Keystone State. New York, 1940.

Reading Company, *A Century of Reading Company Motive Power 1832-1941.* Philadelphia, 1941.

Swank, James M. *Op. cit.*

Webb, Robert N. *Illustrated True Book of American Railroads.* Chicago, 1957.

CHAPTER V

Hamilton, John. *Pennsylvania Road Statistics.* Harrisburg, 1900.

Harper, John H. *The Story of the Pennsylvania Turnpike.* Harrisburg, n.d.

Highway Planning Commission. *Pennsylvania Highways Today and Tomorrow.* Harrisburg, 1950.

Jones, Penelope Redd. *The Story of the Pennsylvania Turnpike.* Mechanicsburg, 1950.

Jordan, Philip D. *Op. cit.*

Pennsylvania—A Guide to the Keystone State. New York, 1940.

Pennsylvania Department of Highways. *Biennial Reports.* Harrisburg, 1905-1960.

Pennsylvania Road Laws. Harrisburg, 1906.

Stewart, George R. *Op. cit.*

Swetnam, George. *Op. cit.*

11

WERT BOOKBINDING, INC.
APR 1973
MIDDLETOWN, PA.